OPERATING & MAINTENANCE MANUAL
Mikro Air Jet Sieve®

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Carefully read this manual before operating or servicing this equipment

Record the MODEL and SERIAL NUMBER of your Air Jet Sieve and always refer to them when ordering replacement parts or requesting service assistance.

Please refer to pages 46 through 56 for additional Service Information
Introduction

The Mikro Air Jet Sieve® is a highly accurate and reliable particle size analyzer designed for determining the particle size distribution of dry powder ranging from 20 μm to 4,750 μm.

Record your Air Jet Sieve MODEL and SERIAL NUMBER. Refer to them when ordering replacement parts or requesting service assistance.

IMPORTANT NOTICE:

(1) Before installing, operating or maintaining this instrument, carefully read this Manual and follow the safety recommendations in Section 3.
(2) Reproduction of this manual in part or in whole is strictly prohibited without prior permission from Hosokawa Micron Powder Systems.
(3) The contents of this manual are subject to change without notice.
(4) The contents of this manual have been carefully prepared. If you have any questions, find errors or omissions, please contact Hosokawa Micron Powder Systems.
(5) Hosokawa Micron Powder Systems does not permit the improper use or handling of this product by a third party. Only Hosokawa Micron Powder Systems service personnel are authorized to repair or modify this product. Note that Hosokawa Micron Powder Systems assumes no responsibility for damage or injury attributed to repairs, changes, etc. performed by a third party.
(6) Hosokawa Micron Powder Systems assumes no responsibility for damages or injury resulting from the attaching, using options or consumables other than Hosokawa Micron Powder Systems genuine qualified parts.
(7) The software of this product is owned by Hosokawa Micron Powder Systems and copyright protected. Copying the software and/or instruction manual in part or whole without permission from Hosokawa Micron Powder Systems is prohibited.
(8) The MAJSx was designed for use with the Hosokawa Micron Test Sieve Screens. While other manufactures screens can and do fit the instrument, Hosokawa Micron Powder Systems cannot guarantee operational results and is not responsible should any damage occur.
(9) The warranty period of this machine is one (1) year from the date of shipment. Any Dismantling, Tampering “Opening” or “Removal” of Fixed Components will VOID the Warranty, unless specified herein.
CRITICAL INFORMATION:

This Instruction Manual describes the proper and safe operation of the Hosokawa Micron Product. It is important that this Instruction Manual be read and fully understood before equipment installation, operation, maintenance and/or inspection of this instrument. Especially, complete understanding of the warning labels, as contained in this manual for safe operation of this instrument.

Prediction of all possible operation hazards as defined in the manual is impossible however; the dangers can be minimized by following the instructions described in this manual. Operate this device with great care and make every endeavor to avoid any accident or damage to the device.
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Section 1: Process Description

The Mikro Air Jet Sieve® – Model X² (MAJSx²) is easy to operate and quickly determines particle size with a short series of sieve test screens. The system utilizes the pneumatic sieving principle that enhances the accuracy and reproducibility of particle size analysis. Use of this device has become a preferred method for such tasks as quality assurance of incoming raw materials and confirmation of final product specifications.

While under negative pressure sample particles are dispersed and de-agglomerated by means of a positive airflow introduced upward through the rotating slit wand. Those particles small enough to pass through a defined Test Sieve opening are carried in the airflow to the vacuum collector.

Precise particle size ranging from 20 to 4,750 μm can quickly be determined. This unique rotating wand method also eliminates the need for tapping or brushing and increases reproducibility with controlled measurements of pressure drop and duration. Overall the system is designed to operate cleaner, quieter and requires less space than other types of similar analytical equipment.

The most important variables to insure a repeatable analysis using the Mikro Air Jet Sieve® are as follows:

- The Sample Volume.
- The Vacuum Pressure.
- The Sieving Time.
- The Test Sieve Screen Integrity.
Section 2: Principles of Operation

The Mikro Air Jet Sieve® - Model x² (MAJSx²) is a highly accurate and reliable particle size analyzer designed to determine the particle size distribution of dry powders ranging from 20 to 4,750 micron. The short sieving times at each sieve cut point are obtained by a reverse air current jetting out of a rotating air wand beneath the Test Sieve Screens. This jetting air action disperses and distributes the analysis material across the surface of the Test Sieve Screen. A Vacuum Fines Collector produces the required airflow jetting action. The same airflow carries the fines fraction that passes through the Test Sieve Screen, according to the principle of aerodynamic sifting. The fines fraction is then collected in either a High Efficiency Cyclone or the Vacuum Fines Collector. A step-by-step description of this sieving action of the Mikro Air Jet Sieve® as shown on Air Flow Diagram Sketch No.: 011414.1, on page 7 of 56 is as follows:

- Air enters through the Air Inlet opening located on the back of the MAJSx².
- Air continues through the duct to the hollow rotation wand.
- Air exits the special shaped slot in the top of the rotating wand with sufficient velocity to pass through the Test Sieve Screen.
- The wand is propelled by the electric motor, thereby sweeping the complete diameter of the sieving area.
- The jet of air distributes, de-blinds, (dislodges) and possibly de-agglomerates the powder analysis sample residing on the top surface of the Test Sieve Screen.
- Those particles fine enough to pass through the Test Sieve Screen are carried away in the air stream and collected in the vacuum and/or cyclone.
- Air and fine particles enter the primary discharge duct and exit the MAJSx².
- The vacuum pressure is set by the operator on the “Testing” screen (while in the advance mode) or “Sieving” screen (while in the basic mode) and is automatically adjusted internally by a rotating valve located between the “Air Inlet” and “Vacuum” air ducts.
- The recommended vacuum pressure range, displayed on the “Testing” screen (while in the advance mode) or “Sieving” screen (while in the basic mode) of the MAJSx² during operation, should read between 8 and 16 inches water column. Refer to page 49 for vacuum gauge verification procedures.
- Utilizing the standard MAJSx² arrangement, the fine dust particles and air exit the main unit and travel through the vacuum hose to the vacuum collection canister.
- If an optional cyclone is attached the dust-laden air is redirected to the cyclone and based upon the efficiency of the cyclone the coarse particles are collected in the cyclone container and the ultra-fines are carried in the air stream to the vacuum collection canister.

CRITICAL OPERATION INFORMATION:

- The MAJSx² was designed for use with the Hosokawa Micron Test Sieve Screens. While certain manufactures screens can and do fit the instrument, Hosokawa Micron Powder Systems cannot guarantee operational results and is not responsible should any damage occur.
- Hosokawa Micron 200mm diameter Test Sieve Screens are supplied with a Blue Test Sieve Gasket and a Black O-Ring. Remove and Discard the Blue Test Sieve Gasket. ONLY the Black O-Ring is to be used on the Test Sieve Screen for proper vacuum seal.
Sketch No.: 011414.1
Section 3: Safety

SECTION 3 - 1: Precautions
SECTION 3 - 2: Electrical Shock
SECTION 3 - 3: Personal Protective Equipment
SECTION 3 - 4: MSDS (MATERIAL SAFETY DATA SHEET)
SECTION 3 - 5: First Aid
SECTION 3 - 6: Administrators and Supervisors of Operators’ Instructions

Section 3-1: Precautions

The precautions shown below are for safe operation of the MAJSx².

In this instruction manual, in order to use the MAJSx² safely, the following indications and symbols are used to identify precautions.

CAUTION:

- Indicates that handling the machine improperly could result in severe personal injury, death or serious property damage.
- Locate the MAJSx² in an area where the electrical components will not be exposed to water.
- Locate the MAJSx² in a place where it will not be adversely affected by high temperature, high humidity or excessive dust. A safe operating temperature range is -10°C ~ 60°C (14°F ~ 140°F) Relative humidity should not exceed 90% non-condensing.
- Do not subject the MAJSx² to strong shock or vibration. Doing so can and will result in failure of the MAJSx².
- As specified by the Material Safety Data Sheet (MSDS) of the powder being analyzed, use proper personal protection and/or a suitable respirator in accordance with plant policy, OSHA or local regulations.
WARNING:

- The instrument is to be properly grounded (earthed); not doing so may result in an electric shock.
- While the machine is energized and running, never open the Access Covers. Doing so may cause injury.
- Before performing maintenance, inspection, etc., turn OFF the power to the main body and disconnect the power plug from the power receptacle. When touching parts in the machine, wait for approximately 10 seconds or more after disconnecting the power plug. Not doing so may cause an electric shock.
- Use ONLY the supplied power cable. If a power cable other than the one supplied is connected, a fire, electric shock or serious failure may result.
- Do not damage, place a heavy object on or forcedly pull the power cord. Doing so may result in a fire and/or electric shock.
- Do not use the machine in a place where combustible gas or ignitable products may be present. Doing so may result in a fire.
- Do not modify the machine.
- This machine is not rated for use in a hazardous environment. Do not analyze flammable or explosive materials.
- When cleaning the pan area, refer to the maintenance service section of this manual for additional information.
- Use properly grounded power outlets for the MAJSx², vacuum and all auxiliary equipment attached to the sieving device.
Section 3-2: Electrical Shock

Do not open the Access Covers on the bottom of the instrument when energized.

Touching the electronic components inside may result in an electric shock or damage to the electronics.

Section 3-3: Personal Protective Equipment

- When operating this instrument, wear dustproof goggles, dustproof masks, gloves, etc. as required.

Section 3-4: Material Safety Data Sheet (MSDS)

- When using this machine, carefully read and follow the MSDS pre-cautions for the specific powder sample being analyzed.

Section 3-5: First Aid

- In the event the analyzed powder comes in contact with the operators’ eyes, skin or is inhaled, administer First Aid in accordance with the prior reviewed powder MSDS.

Section 3-6: Administrator & Supervisor Operators Instructions

- Before installing, operating or maintaining this equipment all individuals involved in the installation, operation and maintenance must carefully read and understand the contents of this manual and follow the Safety Recommendations.

To protect the instrument from the effects of static electricity confirm the following:

- Confirm that the Main Access Cover is attached with all four mounting threaded rubber pads and that all of the pads are securely tightened and are in good condition.
- Confirm that the touch screen panel bottom plate is attached and secured with all five (5) screws.
- Use properly grounded power outlets for the MAJSx², vacuum and all auxiliary equipment attached to the sieving device.
Section 4: What is in the Box
Section 4-1: Major Components

MAJSx²

- Mikro Air Jet Sieve® with threaded Wand
- Tapping Hammer
- Sieve Brush
- Polycarbonate Test Sieve Screen Cover
- Power Cord - IEC 60320 C-13 plug
- Vacuum Cord Adapter with IEC 60320 C-14 and appropriate receptacle.
- Operation Manual

Vacuum (Model No.: 390 – 30 - 118)

- Main Vacuum (Application Specific)
- One (1) Primary collection bag (390 & 30 only)
- One (1) minimum two (2) meter length of hose with connection cuffs
- For 110 volt vacuums - Power Cord Adapter
- For 220 volt vacuums - one (1) C-14 fitting is mounted on vacuum power cable.
- Manufacturers Operation Manual

Compatible Electronic Balances consisting of:

- Balance Main Body (DEFAULT Interface Settings)
- Balance Pan
- Balance Pan Support
- Communication Cable (Serial type in accordance with the manufacturers specifications)
- Power transformer
- Manufacturers Operating / Instruction Manual

Mettler Toledo
model MS1602S

Rice Lake
model TP-3200

Shimadzu
model UX4200H
Section 5: Unpacking and Installation

- Unpack and remove the MAJSx^2 from the shipping box. Confirm receipt of all required components as detailed in the “What’s in the Box” section.
- Place the accessories (sieve cover, tapping hammer, sieve brush, power cord and, depending upon the model, the USB “Flash Drive” and CAT 5 cable) aside for the moment.
- Locate the MAJSx^2 on a level, firm horizontal laboratory bench/table capable of sustaining vibration and positioned for easy operator access.

**NOTE**

The back of the MAJSx^2 is to be positioned no less than a minimum of six (6) inches from a wall or a solid obstruction to enable the operator easy access to the “Power” switch and the Circuit protector.

- Refer to General Arrangement Drawing below for dimensions. The MAJSx^2 weighs approximately 26 Lbs. (11.8 kg). All necessary CAUTIONS are to be used when lifting the instrument.
- Prior to attaching the power cord to the MAJSx^2, confirm that a 3-prong 90 to 240 volt, 50/60 hertz grounded house outlet is within three (3) feet (36 inches) (1 meter) of the MAJSx^2. The electrical power outlet should have “Ground” (“Earth”) protection, and rated for a minimum of 15Amps@110 volt / 10Amps@230 volt, 60/50 Hertz.
- Confirm that the power switch, located on the back of the MAJSx^2, is in the “OFF” position. Insert the power cord into the receptacle located on the back (labeled “A/C IN”) of the MAJSx. Insert the opposite end of the power cord into the house power receptacle.
- **MAJSx^2 ADVANCED OPERATION**: Insert the USB “Flash Drive” into one of the USB ports located on the back (labeled “USB”) of the MAJSx^2 for additional storage capacity. Note: The MAJSx^2 will recognize each USB “Flash Drive” by clicking on the ICON located in the upper left corner of the display.
- Open/Unpack the vacuum and confirm receipt of all the required components (Vacuum Main Body, One (1) Primary collection paper bag, and one (1) two (2) meter length (minimum) of hose with connection cuffs, Power Cord, and Operation Manual). Additionally, confirm that the filters are properly installed in accordance with the manufacturer’s instruction manual. Prior to closing the vacuum, familiarization with the inside of the vacuum, especially the filter installation, is recommended. Where ever possible, locate the vacuum, depending upon the vacuum physical size, beneath or alongside of the lab bench/table. If mounted beneath the lab bench/table, to eliminate the hose from being draped over the top of the bench/table, drill a 2.5 inch (63.5 mm) diameter hole in the bench/table countertop. This size hole will provide ample clearance to pass both the vacuum hose and vacuum power cord through the countertop making for a cleaner installation.
- After locating the vacuum under the bench/table or in another convenient location, plug the vacuum power cord connector into the MAJSx^2 female vacuum power receptacle, (rated for 15Amp@110 volt / 10A@230 volt) located on the back of the MAJSx^2. NOTE: the vacuum operating voltage MUST be the same as the voltage that is supplied to the MAJSx^2. In order to achieve reproducible analysis results using the MAJSx^2, the vacuum MUST always be plugged into the MAJSx^2 power outlet IEC 60320 C-13 receptacle (or adapter), (rated for 15Amp@110 volt / 10Amp@230 volt) located on the back of the MAJSx^2. The vacuum’s power switch MUST always be in the “ON” position.
- Using the supplied vacuum hose, connect the vacuum hose to the MAJSx^2 vacuum port located on the back of the MAJSx^2, labeled “Vacuum Inlet”.

Page 12 of 56
Section 5: Unpacking and Installation (continued)

- **ELECTRONIC BALANCE FOR MAJSx² ADVANCED OPERATION:** Open/unpack the electronic balance and confirm receipt of all the required components (balance main body, balance pan, balance pan supporter, interface communication cable, power transformer, and instruction manual). Depending upon the Electronic Balance Manufacturer, connect the supplied RS232 serial cable. The Electronic Balance **MUST** always be powered “ON” and connected to the MAJSx² prior to powering “ON” the MAJSx². **In order for the balance to communicate with the MAJSx², the balance factory DEFAULT RS232 interface settings **MUST** be used.**

- **Compatible balances are:** Mettler Toledo model MS – Shimadzu model UX and Rice Lake model TP

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<th>NOTICE</th>
<th>The MAJSx² Advanced Model can be set-up to Print either directly to an attached printer or to a Corporate Local Area Network (LAN) printer.</th>
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- **PRINTER FOR MAJSx² ADVANCED PRINTING OPERATION:** Confirm receipt of all required components. The Printer components include the printer main body, toner cartridge; installation/warranty guide, operations manual, and power cord, a USB Cable or a CAT 5 Network (LAN) cable will be required for connection to the MAJSx². When using a direct connected printer, locate the printer, depending upon its physical size, as close as possible to the MAJSx². After positioning the printer, plug the printer power cord into an independent wall socket. Next make certain to connect the printer USB cable to one of the USB ports located on the back of the MAJSx². After connecting the components, follow the manufacturer’s instructions to complete the installation.

  - When connecting the MAJSx² ADVANCED model to a “CORPORATE LAN NETWORK” it is recommended to contact the local IT Department for installation clearances and recommendations.

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<th>NOTICE</th>
<th>Installation / Powering the MAJSx²</th>
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- Store the installation, operation and warranty manuals/guides in a safe location for future reference.
- In order to achieve reproducible analysis results using the MAJSx², the vacuum **MUST** always be plugged into the Vacuum Power outlet located on the back of the MAJSx².
- The vacuum power switch, located on the vacuum body **MUST** always be in the “ON” position.
- The vacuum power outlet located on the back of the MAJSx² is rated for a maximum of 15 Amp@230V, 50/60Hz, single phase.
- When operating the MAJSx² in Basic Mode, the instrument is **NOT** capable of communicating with a balance and/or a printer.
- When operating the MAJSx² in the Advance mode, it is suggested that the Electronic Balance be powered “ON” and connected to the MAJSx², prior to powering “switching” ON” the MAJSx².
- When operating the MAJSx² in the Advance mode, the MAJSx² will display an ICON when a USB “Flash Drive” and a Balance are connected and communication has been established.
- The USB “Flash Drive” is used as an alternate storage location.
- Connect the electrical power cord of the MAJSx² and, if operating in the Advance mode, the optional balance and printer to a suitable sized wall outlet, proper voltage 90 - 240V, 50/60Hz, single phase.
Section 6: General Arrangement Drawing

(Front View)

(Top View)
Section 7: MAJSx² Operation Component Layout

Basic Operation Mode

Vacuum

MAJSx²

Balance

Advance Operation Mode

OPTIONAL Accessory

Cyclone

Basic or Advance Operation Mode

Installs between the MAJSx² and the Vacuum

Printer
Section 8: Preparing the MAJSx² Air Jet Sieve

Section 8-1: Power/Communication Panel

(See Figure 1 - Left to Right)

- Power “On/Off” switch
- Main power “A/C IN” supply 90-240 volt, single phase, 50/60 hertz, current draw without the vacuum attached is 0.5 amperes at 110 volt 60 Hertz, Single Phase.
- Vacuum power “VACUUM” supply port, the vacuum MUST always be connected to the software controlled “VACUUM” port of the MAJSx.
- Vacuum receptacle fuse “VACUUM FUSE”
- MAJSx Advanced Operation Only
  - Three (3) USB ports permitting the connection of USB devices.
  - One (1) RS232 DB9M serial port “SCALE” for the connection of a balance
  - Local Area Network “LAN” port (CAT 5).

Section 8-2: Cable Connection

- Insert the power cord in the “A/C IN” receptacle located on the back of the MAJSx
- Insert/Connect the Vacuum power cord (or the vacuum power adapter cord) to the “VACUUM” receptacle.
- MAJSx Advanced Operation Only
  - Connect a compatible “Balance” communication cable to the RS232 “SCALE” port
  - Confirm that the Balance is recognized by the software and that the “Balance” ICON is visibly dark black in the upper right corner of the screen. (see Figure 14).
  - Connect the Network cable to the “LAN” port.
  - Insert a USB “Flash Drive” into one of the USB ports on the back of the MAJSx².
  - Confirm that the USB “Flash Drive” is recognized by the software, and that the “USB” ICON is visibly dark black in the upper left corner of the screen. (see Figure 4).
Section 9: Basic Model Operating Procedure (Factory Default)
(For the Advanced Model (MAJSx²-a) proceed to page 23)

Section 9-1: Power-up the MAJSx²

Basic Operation Mode

- For the system to perform properly, connect the vacuum hose and the vacuum power cable to the appropriate ports before energizing the MAJSx²-b.
- Confirm that the vacuum is plugged into the MAJSx² “VACUUM” receptacle (outlet) and that the suction hose is connected to the “VACUUM” port (see Figure 1), both located on the back of the MAJSx²-b.

- Confirm that the vacuum power switch is in the “ON” position.
- Next, energize the MAJSx²-b, by pressing the “On/Off” rocker switch to the “ON” position located on the back of the MAJSx²-b as displayed in Figures 1.
- The touch screen of the MAJSx²-b will briefly display the Hosokawa Logo during the software startup. (see Figure 3)
After the software has completely opened, the “SIEVE” window will be displayed (see Figure 4).

![Figure 4](image)

Section 9-2: Set-Up for Basic Operation

- The SIEVE window displays the START button along with the Sieving Parameters, including the “Pressure” and “Time” default values. (see Figure 4).
- To enter or change the “Pressure”, press the corresponding cell, whether blank or pre-populated. By doing so the keyboard will be activated and displayed. After typing the desired information, press the Next button to save the entered value and to open/display the “Time” keyboard. After typing the desired information, press the Next button to close the keyboard and save the entered or changed values. (see Figures 5a & 5b).

![Figure 5a](image)

![Figure 5b](image)

- Pressing the ADMINISTRATOR folder will open the window that will display the “IP Address” and “MAC ADDRESS” numbers, “Language”, “Pressure Unit”, “Check USB Update” and “MAJSx Advanced Mode” and “FACTORY SETTINGS” selection buttons. (see Figure 6)

![Figure 6](image)

- The specific “IP Address” is displayed when the MAJSx²-b is connected to a network. (see Figure 6)
- The unique MAC Address assigned to this MAJSx²-b will be displayed after “MAC:” (See Figure 6)
• The “Language” selection button is a pull-down menu enabling the Operator to select the language that is to be displayed throughout the MAJSx² software (English, Spanish, Hindi, Dutch, French, German, Italian, Japanese, Portuguese, Russian, Korean and Chinese). (See Figure 7)

• “Pressure Unit” button is a pull-down menu enabling the operator to select the desired pressure measurement unit (inch H2O, Pascal, mm Hg, inch Hg, or PSI).(see Figure 8)

• “Check USB Update” compares the installed software version to that contained on an installed flash drive where the operator can upload software updates/patches. (see Figure 9).

• “MAJSx Advanced Mode” button, provided the operator has the individualized specific “Password” to convert the MAJSx²-b, “Basic” mode of operation to the MAJSx²-a “Advanced” mode of operation. Contact Hosokawa Micron Powder Systems for more Information (See Figure 10).

• **FACTORY SETTINGS** In order to access the Factory Settings while in Basic Mode a Password is required Contact Hosokawa Micron Powder Systems (see Figure 10)
Section 9-3: Basic Mode (Manual) Operating Procedure

- Connect the Vacuum to the MAJSx²-b.
- Insert the Vacuum power cord into the “VACUUM” power outlet located on the back of the MAJSx²-b. Once plugged into the MAJSx²-b, confirm that the vacuum power switch is set to the “ON” position. (see Figure 1)
- Connect the Vacuum hose cuff to the vacuum port on the back of the MAJSx²-b labeled “VACUUM”. (see Figure 1)
- Press the On/Off rocker switch, located on the back of the MAJSx²-b, to the “ON” position. (See Figure 1)
- The MAJSx²-b software will perform the start-up sequence. Upon completion the SIEVE page will be displayed. (see Figure 4)

Prior to pressing the START button, set the “Pressure” and “Time” values to the desired level that will be used during sieving operation.

- To enter or change the “Pressure”, press the corresponding cell, whether blank or pre-populated. By doing so the keyboard will open enabling the desired numeric value to be entered (recommended vacuum pressure 8 to 16 inch water column.
- After entering the desired value, press the NEXT button to save the entered value and to open the “Time” keyboard. After typing the desired sieving Time, press the NEXT button to close the keyboard and save the entered/changed values. (see Figure 5a & 5b)
- To heighten repeatability, independently record the Test Sieve Screen Number (Mesh) or Micron Size, Pressure and Time used for each analysis.

**NOTICE**

- The MAJSx² is designed for use with the Hosokawa Micron Test Sieve Screens.
- While other manufactures Test Sieve Screens can and do fit the MAJSx², HMPS cannot guarantee operational results, or be held responsible should any damage occur.
- When using the HMPS 200mm Test Sieve Screens, both a Black O-ring and a Blue Test Sieve Gasket are supplied.
- The Black O-ring is recommended to insure a proper vacuum seal. The Blue Test Sieve Gasket is NOT required and should be removed and discarded.
• Place the empty Test Sieve Screen on an independent balance and record the weight. Tare the balance with the Test Sieve Screen remaining on the balance. Once tared, place the sample (suggested 10 to 100 grams) to be analyzed on the Test Sieve Screen and record the sample weight.
• Place the Test Sieve Screen with the sample on the MAJSx²-b and position the Test Sieve Cover on the Test Sieve Screen.
• With the Test Sieve Screen including the sample in place, using the previously entered sieving parameters, press the START button to begin the analysis.
• Once the START button is pressed, the MAJSx²-b sieving process will begin. The vacuum will power and the slit wand will begin to rotate (clockwise) once the vacuum pressure reaches approximately 7 inches of water column (or equivalent).
• Should the desired Sieving Pressure not be reached, an error message will appear stating “Pressure not Matched!” (see Figure 11)
• Press the OK Button.
• After pressing the OK button the software will return to the main “SIEVE” page. (see Figure 4)

Figure 11

• Prior to restarting the process confirm that the Test Sieve Screen with the O-ring and the Polycarbonate Test Sieve Screen Cover are properly seated in the MAJSx²-b housing, the vacuum hose is properly connected, and the vacuum power switch is in the “ON” position.
• In the event the condition continues, inspect the vacuum filters, as they may require cleaning.
• After performing these checks press START. (see Figure 4).
• Should the desired vacuum pressure continue not to be reached, refer to the guidelines in the troubleshooting section of this manual.
• Once the wand begins to rotate, the sieving time will begin to decrease. Both the Pressure and the Time Left will be displayed on the screen, until the Time reaches 0 (see Figure 12)

Figure 12

Figure 13
If for any reason the process needs to be stopped, during the analysis (for example: to brush the Test Sieve Cover free of statically charged sample) press the PAUSE button. (see Figure 12).

To re-start the analysis, press the RESUME button. If for whatever reason the analysis needs to be aborted, press the ABORT button. (see Figure 13)

After the preset Time has reached 0, the wand will stop rotating, power to the vacuum will stop, turning the vacuum off, and the MAJSx²-b screen will display the main SIEVE screen. (see Figure 4).

In order to determine the volume of the retained sample and complete the analysis, Tare the independent balance, place the Test Sieve Screen with the retained sample on the balance.

Independently record the combined weight of the Retained Sample and the Test Sieve Screen. Using the previously saved information (the Total Weight of the Test Sieve Screen and the Sample) the operator can determine the weight of the retained sample.

In order to determine the percentage of the sample that has passed through the Test Sieve Screen use the following formula.

Initial sample weight \((A)\) minus the Retained sample weight \((B)\) divided by the Initial sample weight \((A)\) x 100. \((\frac{A - B}{A} \times 100)\)

**NOTE** When using the MAJSx² in the Basic Operation Mode, the MAJSx²-b is NOT capable communicating with a balance or Printer.

Section 10: Advance Model Operating Procedure *(Optional)*

**Section 10-1: Power-up the MAJSx² in the Advance Operation Mode**

- For the system to perform properly, connect the vacuum hose and the vacuum power cable to the appropriate ports before energizing the MAJSx²-a.

- Confirm that the vacuum power cord is plugged into the MAJSx² “VACUUM” receptacle (outlet) and that the cuffed vacuum hose is connected to the “VACUUM” port (see Figure 2), both located on the back of the MAJSx²-a.
• Confirm that the vacuum power switch is in the “ON” position.

• Confirm that a compatible balance is connected to the MAJSx²-a by means of the RS232 serial cable connection port located on the back of the MAJSx²-a (see Figure 1).

• Confirm that the software recognized the compatible Balance. The “Balance” ICON in the upper right corner will become dark black. (see Figure 14). In addition clicking on the ICON will display the name of the connected balance.

• Connect the Network cable to the “LAN” port (see Figure 1)

• Insert the USB “Flash Drive” into one of the USB ports of the MAJSx²-a.

• Confirm that the USB “Flash Drive” is recognized by the software. The “USB” ICON will become dark black in the upper left corner of the screen. (See Figure 4). In order to remove the USB safely click on the ICON, highlight the USB to be removed and follow the on-screen instructions for the proper removal.

• Confirm that a Printer is connected to the MAJSx²-a by either USB, WIFI or CAT 5 network LAN

• Energize the MAJSx²-a, by pressing the “On/Off” rocker switch to the “ON” position located on the back of the MAJSx²-a (see Figures 1 & 2).

• The touch screen of the MAJSx²-a will briefly display the Hosokawa MAJSx² Logo during the software startup. (see Figure 3)

Figure 3

• After the software has completely opened, the Username Sign-In window will appear (see Figure 14).

Figure 14

• Open the Username Keyboard by pressing the white cell to the right of the title Username:
• Should this be the first time the software is started a default Username and Password will be supplied by the Administrator. Only Administrators are permitted to customize the User list and Set-Up the software for operation.
• After entering the Default Username press the → to open the Password entry cell.
• Enter the Default password then press the → to return to the main Sign-In page.
In the event either the **Username** or the **Password** were incorrectly entered either or both cells will be bordered in red and an error message will appear permitting the operator to re-enter the information. (see Figures 15 & 16)

![Figure 15](image1.png) ![Figure 16](image2.png)

- Provided the Username and the Password are entered properly, the software will advance opening the **Sieve** page.

**Section 10-2: SIEVE Page**

- On the **Sieve** page the details of the analysis to be performed will either be displayed or must be entered by the operator.
- In order to enter information the operator must first press the **Select Recipe** button to define the type Recipe that will be performed.

![Figure 17](image3.png)

- Please note that depending on the Users Role (Administrator)(Power User)(Test User), the User will have the ability to make either limited, unlimited, or limited to only running recipes.
• On this window the user can choose from the following to perform a recipe;
  o No.: 1 "Temporary Recipe" (this is a onetime recipe and the set-up is NOT saved).
  o No.: 2 "Add Recipe" (this is used to develop a recipe that will be used frequently, and
    the operating parameters can NOT be changed)
  o No.: 3 and higher are “Prior Saved” recipes. These recipes have been saved to
    insure set-up and operation repeatability. These recipes can ONLY be edited by
    either the “Power User” or the “Administrator”.

• By pressing the “Pencil” ICON the saved parameters for that Recipe will be opened
  allowing the Test User to make changes only to the Company – Sample – Lot No. - Percent
  Mode and Sample type fields.

• By pressing the “Trash Can” ICON the User can “Trash” (Delete) that specific Recipe from
  the list.

• If for any reason either the Pencil or Trash Can ICON's are “Grayed-Out” on a
  specific Recipe, that particular Recipe cannot either modified or trashed, by the User.

![Figure 19](image-url)

• After selecting the Recipe to be performed the software will return to the “Sieve” page where
  the “User”, if permitted can enter the specific details for the analysis (Company – Sample – Lot
  No.: Additionally the “Percent Mode” (Passing or Retained) and “Sample Type” “New” or
  “Reuse” can be selected for the analysis. (see Figure 19)

• If “New” is selected the software will instruct the “User” to introduce a “New” sample volume for
  each Test Sieve Screen used for the analysis. If Sample Type “Reuse” is selected
  the software will be modified such that a single volume of sample is to be used, and the volume of
  sample staying on the Test Sieve Screen will be used as the sample for the next Test Sieve
  Screen (this process is to be used for the entire number of Test Sieve Screens selected for the
  Analysis).

• In the event the “User makes an error during the information entry process, the User can re-
  open the cell with the error by tapping on the errored cell (this will open the keyboard allowing
  for the correction to be performed), or the User can press the CLEAR button, this will clear
  (erase) all but the “User” field, allowing the User to re-enter all the information, after pressing
  the Select Recipe button.

• In the event the “User” has finished his session the LOGOUT button should be pressed, this
  will open a window requesting confirmation of the LOGOUT action.
Should the answer be “Yes” the Sign In page will reappear. Should the answer be “NO” the Window closes and the software returns to the Sieve page.

After re-entering the Analysis parameters on the Sieve page the NEXT button is to be pressed.

This will open the Test Sieve Selection window (containing both ASTM/Mesh and ISO sizes).

To simplify the selection of Test Sieve Screen(s) there is a search window located above the list. Enter the numeric value (either Micron or Mesh) of the desired Test Sieve Screen then press NEXT (on the keyboard page). After pressing the NEXT button on the keyboard page the Test Sieve Screen list will display all the Test Sieve Screens containing that value. (see Figure 22)

Please note the Test Sieve Screen sizes can be selected in random order.

Once a Screen is selected the screen will be shown in the cell to the right of the selection chart.

In the event a Screen is incorrectly selected simply tap on the incorrect screen to remove it from the selected list.

NOTE: Test Sieve Screens can be selected at random (see Figure 22a)
• After selecting the Test Sieve Screen sizes that will be used for the analysis recipe press the NEXT button to advance the software. (see Figure 22a)


![Figure 23](image)

**Figure 23**

• Please note that the Screen Micron order will be automatically aligned so that the process always starts with the Finest (Smallest) micron opening (see Figure 23).

• In order to Begin The Process the desired Vacuum Pressure, Sieving Time, and Boost Time must be entered for EACH Test Sieve Screen.
  o **Vacuum Pressure** Units is the pressure (Administrator settable Pressure Units) that will be used for that particular Test Sieve Screen.
  o **Sieving Time** (seconds) is the total desired Sieving Time (default slit wand rotation is 18 rpm) of operation (this is the time the slit wand and the vacuum will be powered), that will be used for that particular Test Sieve Screen.
  o **Boost Time** (seconds) is the time the slit wand will rotate at “Boost” Speed (24 rpm).
  o The **Boost Time** is used to disperse difficult to sieve or highly cohesive samples.
  o The **Boost Time** is an integral part of the “Sieving Time” and is active at the beginning of the “Sieving Time” cycle. If the Boost option is not required enter 0 in the cell, pressing the Begin The Process will not function without a numeric value in the cell.

• After Pressure, Sieving and Boost Time cells have been entered press the Begin The Process button to advance the software and start the menu driven analysis.

• The software will instruct the User to place the finest (smallest) opening Test Sieve Screen on the Scale to determine the Tare weight.

• After pressing Accept the Tare weight will be displayed and the software will advance requesting that the Sample be placed on the Screen for weighing. (see Figure 24)

• After pressing Accept the software will instruct the User to place the Screen on the Sieve (MAJSx²-a) body. (see Figure 25a)

• If the User determines that an error took place with either of the weight measurements the Undo button can be pressed to repeat the measurement.
Figure 25

- Please Note, the User can press the Abort button at any time to terminate the analysis. (see Figure 25a)
- If the User wants to proceed with the analysis the Start button is to be pressed.
- Once the Start is pressed the Vacuum will start and after the vacuum pressure exceeds approximately 7 Inch water column (or equivalent) the slit wand will start rotating.
- If a Boost Time was entered the Boost Cycle will time down first followed by the remaining Sieving Time.
- The Pressure Units and reducing Time Left will be displayed.
- If for any reason the process needs to be paused press the Pause button, this will stop the rotation of the Slit Wand and turn off the Vacuum. (see Figure 26)

Figure 26

Figure 27

- After the User has performed whatever task that was required or cleared the issue the User can either press the Abort or Resume to either stop the analysis or to complete the time cycle. (see Figure 27)
- In the event the Abort button is pressed the software will return to the Sieve page. (see Figure 19)
After the weight has been accepted by pressing the **Accept** button, the retained sample weight will be displayed and the User will be instructed to "Remove the screen and then press OK" this will advance the software to continue with the analysis similar to the method that was used for the first Sieve screen by displaying the following screen: (see Figure 29)

![Figure 29](image)

- The User is to follow the on-screen instruction until all of the Sieve screens have been used to determine the overall analysis.
- If on the “Sieve” page, **REUSE** was selected as the Sample Type the software will (lightly) display the retained sample weight (in the “Place Sample on the Screen (Weight)” box. The box will be shaded NOT permitting the User to make changes to the weight.
- If **NEW** was selected for the Sample Type the User will be instructed to place a **NEW** sample on the Screen, in order to determine the weight of the “NEW” sample.
- Pressing the **START** button will, as with the prior Sieve screen start the Vacuum and after the vacuum pressure exceeds approximately 7 Inch water column (or equivalent) the slit wand will start rotating.
- The Pressure Units and reducing Time Left will be displayed.
- Once the time reaches 0 the Slit wand will stop rotating and the Vacuum will turn-off.
- The software will advance instructing the User to “Place the screen with the retained sample” on the scale to determine the retained weight.
- The “Sample on Scale (Weight)” will be displayed. If the User determines that an error has occurred in the weighing process the User can press the **Undo** Button to repeat the weighing process.
- If the sample weight is deemed to be correct the User is instructed to “Remove the screen and then press OK”
- After the **OK** button is pressed the software advances to display the **TEST REPORTS** page.
- In the event the weight of the retained sample is greater than the starting weight, an error message will be displayed. (see Figure 30)

![Figure 30](image)

- After pressing the **OK** button the software returns to the **Sieve** (Select Recipe) page.
On the TESTS REPORTS page (see Figure 31) the User can select the “Results Type”
  o Lin-Lin (Linear – Linear graph format)
  o Rosin-Rammler (NOTE: The Rosin Rammler Result Type can be selected from the “Pull-Down”. In order for the Rosin-Rammler calculation function to become active a minimum of two (2) Test Sieve Screens must be used during the analysis recipe).
  o Once the Rosin-Rammler “Result Type” is selected the software opens a window enabling the User to change the three (3) “% Pass” values that will be used to calculate the micron size for the corresponding percentage, after pressing the Calculate button. (see Figures 32 & 33)

Also displayed on the TEST REPORTS page: (see Figure 31)
  o Test Results in the “Percent Mode”
    • (Pass or Retain – whichever was selected after Selecting the Recipe Type)
  o Size in microns (for each Test Sieve used in the analysis Recipe)
  o Sample Weight (for each Test Sieve used in the analysis Recipe)
    • Initial (Before sieving)
    • Final (After Sieving)
  o Cum. % (Sample Cumulative Percentage)

The page also has buttons that will permit the User to add “Notes:” and if necessary perform mathematical calculations (Calculator)
Additional User tools on this page are:
  o GRAPH Pressing this button will graph the results for each Test Sieve Screen used during the analysis. (see Figure 34)
PRINT

Pressing this button will open the Printer selection sub window where the User can select a printer to send the data for printing. (see Figure 35)

SAVE

Pressing this button will open the Select Device which will list the available storage devices connected to the MAJSx2. The User must select (highlight) the device where the analysis results are to be saved which will activate the NEXT button then press the NEXT button to complete the Saving Function.

- After Selecting a Device and pressing the NEXT button, a window will be displayed requesting that User “Enter a File Name” before saving the Report. CAUTION in the event the Save Button is pressed before the File Name is entered the Report will NOT be saved. (see figure 36)
- Upon completion of the analysis recipe press the FINISH button to return to the Sieve page to either Repeat Test or Select Recipe to select a different recipe.
- In the event the LOGOUT button is pressed at any time a confirmation window will open, Pressing NO will return to the location in the recipe that was open at the time the LOGOUT button was pressed. If YES is pressed the software will return to the Username / Password Sign-In page. (see Figures 37 & 38)
This page permits the user to sort the saved analysis recipes for comparative evaluation. (see Figure 38)

The primary sort pull-down window allows the user to select from one of the following fields as the primary sort field:

- SAMPLE – (sort default topic)
- LOT NO.
- DATE
- OPERATOR

After selecting a primary sort category, the sort can be further narrowed by entering specific term values in the blank cell to the right of the primary sort field.

The sort can be further narrowed by selecting a combination of the following secondary sort fields:

- Percent Mode
  - Pass
  - Retain
- Sample Type:
  - Reuse
  - New

During the field selection process, the saved analysis automatically sorts to display only the analysis results that meet the sort criteria. (see Figures 39 & 40)
If at any time a selection error has been made the **RESET** button can be pressed clearing the sorted items allowing the User to correct the sort criteria.

After the sort is processed those saved analysis will be displayed with a + on the right side of the row. This is an indication that the analysis is available for comparison.

After selecting from the list the + switches to a - this is the button to be used to remove the analysis from the comparison group.

NOTE a maximum of five (5) analysis can be selected, should more than five (5) be selected the following ERROR message will be displayed. (see Figure 41)

After pressing the **Exit** button the display returns to the Sort selection chart permitting the User to remove the excess comparison analysis from the list, by pressing the - button.

After the Analysis reports have been reduced to not more than five (5) the User must press the **NEXT** button to advance to the step in the software where the User can perform additional activities.
On this page the User can either select, (see Figure 42)

- Pressing the Exit button will reopen the REPORT page.
- Pressing the PRINT button will open the FIND PRINTER window to select a printer to send the data for printing. Additionally the User can select OVERLAY which will send the OVERLAY graph to the selected printer for printing of the selected Analysis.
- Pressing the SAVE Button will open the SELECT Device for saving the Sorted Analysis. In the event the Data has no positive values an error message will be displayed. Press the OK button to close the window.

![FIND PRINTER](image)

Figure 43

- Pressing the OVERLAY Button will display the selected analyses on a single graph. A legend of the selected analysis will be displayed by the test number # on the upper right side of the graph. The User must press the X located in the upper right corner to close the display. (see Figure 44)

![Figure 44](image)
Section 10-4: SETTINGS Page

- The SETTINGS page is the location where the Administrator sets the main operating parameters of the Mikro Air Jet Sieve (see Figure 45)

![Figure 45](image)

- Displayed on this page are the following:
  - **IP Address**: Internet Protocol (this is a unique identifier for electronic connected to the internet) When connected to an Internet Accessible Network the specific address will be displayed.
  - **MAC Address**: Media Access Control (MAC) (this is a unique address that identifies the network card, which is used to access the network. Each device has a unique MAC assigned by its manufacturer.
  - **Pressure Units**: This is a pull down controlled by the Administrator that will display pressure values, according to the local standards and can be set for:
    - Inch Water (In H2O) (Recommended Range 7 to 16 In H2O)
    - Pascal (Pa) (Recommended Range 1741.88 to 3981.44 Pa)
    - Millimeter Mercury (mmHg) (Recommended Range 13.07 to 29.86 mmHg)
    - Inch Mercury (In Hg) (Recommended Range 0.51 to 1.18 IN Hg)
    - Pounds per Square Inch (psi) (Recommended Range 0.25 to 0.58 psi)
    
    (See Figure 45)
  - **Weight**: The DEFAULT for this category is Grams and is not capable of being changed

- The following Features are controlled by the Administrator and are either ON or OFF:
  - **LOGIN** – Checking this box will enable the requirement for each user to Login in order to use the MAJSx².
  - **RECIPES** - Checking this box will enable the user to construct a recipe to be used as a standard protocol.
  - **WIFI** (Wireless Fidelity) - Checking this box will enable the connection to a WIFI within range. By checking the box the CONNECT TO WIFI window will open displaying the WIFI networks (see Figure 46)

![Figure 46](image)

![Figure 46a](image)
Select the desired network, click in the PASSWORD: cell to open the keyboard for entry of the selected network password. Once entered press the → button to close the keyboard enabling the User to press the CONNECT button. After connecting to the desired Network the "Successfully Connected to Network" window will be displayed (see Figure 46a. Press the OK button to close the window and return to the SETTINGS page.

- **EXIT** – Pressing this button will close the SETTINGS Page and the software will reopen the SIEVE Page.
- **MORE** – Pressing this button will open the SETTINGS page permitting the Administrator to set DEFAULT settings: (see Figure 47)

![Figure 47](image)

- **Time Zone** – Pressing this Button opens a sub window where the Time Zone can be searched for Setting of the Clock (and Date). Enter the first few letters of the location where the MAJSx^2 is located and press the → on the keyboard to initiate the search. The window will display those locations that contain the characters that were entered. Select the desired location and press the APPLY button to lock the location. To Set the Clock Press the Set Clock button. The SET TIMESTAMP window opens displaying the Set Date: cell and the Set Time: – Hours – Minutes - Seconds cells. To set the date click on the date cell which will open a calendar that can be scrolled until the desired date is located and set by pressing on the date. To set the time there are individual up/down scroll buttons that permit the setting of the hours (24 hour clock), minutes and seconds. After setting the date and time press the APPLY button to lock the values and to return to the SETTINGS page. Note the CANCEL button can be pressed at any time to return to the SEARCH TIME ZONE page.

- **Timestamp** – Pressing the MM-DD-YYYY hh-mm-amp button sets the format that will be used throughout the software for the Date and Time. After setting the date and time press the APPLY button to lock the values and to return to the SETTINGS page. Note the CANCEL button can be pressed at any time to return to the SETTINGS page.

- **Language** – Pressing this button opens the SEARCH LANGUAGE sub window where the SYSTEM (display) Language can be set. Enter the first few letters of the desired language that is to be displayed on the touch screen of the MAJSx^2. After the desired language has been identified and marked, press the → on the keyboard to initiate the search. The window will display those languages that contain the characters that were entered. Select the desired language and press the APPLY button to lock the language and to return to the SETTINGS page. Note the CANCEL button can be pressed at any time to return to the SETTINGS page.

- **Basic Mode** – Pressing this button will open the Change to Basic Mode window. On this page pressing the APPLY button will change the Operation Mode from Advanced to Basic opening the Basic Mode operation window. Note the CANCEL button can be pressed at any time to return to the SETTINGS page.
• **Backup / Retrieve** – Pressing this button will open the Backup/Retrieve window (see Figure 48)

![Figure 48](image)

- Pressing **BACKUP** opens the **Select the USB Device** window where the user can highlight the desired location for the backup to be placed. After highlighting the USB Device the **Next** button becomes active. Pressing the **Next** button will open the **New File Window** where the User is to enter the NEW Name of the Backup File. Click in the blank cell to open the keyboard to enter the New Name. Once entered press the **GO** button to save the file and receive confirmation that the Backup was Successful and Identify the media where the file was saved. Press the **DONE** button to close the confirmation window and return to the Backup / Retrieve window. Pressing Retrieve Opens the **Select USB Device** window. Once the device is highlighted the **Next** button becomes active. Enter the name of the Backup file that is stored on the highlighted USB and press the **GO** button to retrieve the file and open the “Retrieve Successful” window. Press the **DONE** button to close the confirmation window and return to the Backup / Retrieve window. Note the **CANCEL** button can be pressed at any time to return to the **BACKUP / RETRIEVE** page. Press the **Back** button to go back one page to the **SETTINGS** page.

- In the event a USB Flash drive is not inserted in the MAJSx² an error message indicating **No USB Device Found!** will appear, press the **EXIT** button to close the window.

• **Printers** - Pressing this button will open the **FIND PRINTER** window, (see Figure 49)

![Figure 49](image)
o Should a list of prior installed printers exist the User can select a printer from the list or search the list by clicking on the magnifying glass to the right of the search cell. This will open the software keyboard or if an external keyboard is attached the operator can enter the first few letters of the desired printer that will be used to search the field list. Press the arrow button to start the search. The list will be reduced to display only those printers containing the search characters.

![Figure 50](image)

After selecting the desired printer in the FIND PRINTER list, the SET PRINTER button must be pressed to establish the selected printer as the default printer where the data will be sent for printing.

o In the event there are no printers in the FIND PRINTER list, a NEW printer must be added. Pressing the NEW button will open the ADD PRINTER window which will automatically search via WIFI for those printers within range. (see Figure 51)

![Figure 51](image)

After selecting the desired printer in the SELECT PPD DRIVER (Postscript Printer Description) listing the most appropriate driver will be displayed at the top of the listing.

o The User must select the driver to be added to the software. Pressing the ADD button will open the ADD DETAILS window requiring the User to enter the PRINTER NAME and PRINTER LOCATION.
The User must then press the **ADD** button to add the driver into the computer permitting the printing to the specified printer. After pressing the **ADD** button the software reopens the FIND PRINTER Page (see Figure 50).

- **Update Version** - Pressing this button will open the Software Verification Window which will display the Current Version and search for an Update. If the USB does not contain an update a window stating **“No Update Found!”** will be displayed. (see Figure 52)

![Figure 52](image)

Current Version 0.036
No Update Found!

- Press the **Back** button to return the software to the SETTINGS page. (see Figure 52)

- **Users** - Pressing this button will open the Add / Modify User window. (see Figure 53)

![Figure 53](image)

- Pressing the **Add User** button will open the New User Registration window
The Administrator is the only User that can **Add New Users and Modify existing Users.** The Administrator will add the Username – Password – Confirm Cells with Temporary access information. Clicking on any of the cells will open the Software keyboard for information entry. Clicking on the Language Cell (English (Default) will open the SEARCH LANGUAGE window enabling the Administrator to set the User Language, that will be used specifically by the New User. (see Figure 53)

- The User Role must also be established by the Administrator
  - Administrator – Has FULL rights to Add Users, Modify Users and to Create Recipes.
  - Power User – Has Rights to Create and Modify Recipes.
  - Test User – Is limited to performing pre-set Recipes.

- After the **SUBMIT** button has been pressed the **User Added Successfully!** Window will be displayed.

  - Press **OK** to close the window and return to the Add / Modify User window.
  - Pressing the **Modify User** button opens the **Modify User** window (see Figure 54).
  - After checking ✔ the **EDIT** box follow the same instructions that were given for the **New User Registration**. Press **OK** to close the window and return to the Add / Modify User window.

- After Entering a **New User** or **Modifying** a User the next time that specific User “Signs – In” the User will be given the opportunity to confirm or change the Password using the following window. (see Figure 56)
In the event the cells are left blank or incorrect entries are made the window will remain displayed after the OK button is pressed.

In the event the New User attempting to "sign-in" does not have the proper authority the New User Password Entry window will remain open. In order to close the window the User must press the CANCEL button.

Logs - Pressing this button will open the TRANSACTIONS / TESTS Log window. (see Figure 57)

Pressing the TRANSACTIONS button will open the TRANSACTION Date Range Window.

Clicking on either blank cell will open a calendar for the Administrator to select the FROM and the TO date range to be sorted.

After selecting the range press the OK button to sort the transactions for that period.

The Total Number of Transactions will be displayed beneath the date range. After the sorting has completed the SAVE and PRINT buttons become active.

Pressing the SAVE button opens the “Select USB Device” window. After highlighting the USB Device where the data is to be saved, the User can either press the NEXT button which opens the Enter File Name window, or the CSV button or the PDF format button.

If the SAVE button is pressed and there is No Storage device attached “No USB Device Found” Error message will be displayed. Press the EXIT button to clear the message.

The User also has the option to exit from the saving action by pressing the EXIT button.
• Provided a USB Device is attached a window opens enabling the User to enter the name of the file that will be used to save the Transaction Data on the USB Device. Press the OK button to complete the Data Saving action.
• Pressing PRINT opens the “FIND PRINTER” window for the User to select the Printer where the Transaction log will be printed. Press the PRINT button to print the Transaction Log, or press the EXIT button to save the information. (see Figure 58a – 58b)

Figure 58a

Figure 58b

• Pressing the TEST LOG button will open the TESTS LOG Date Range Window.
• Clicking on either blank cell will open a calendar for the Administrator to select the FROM and the TO date range to be sorted. After selecting the range press the OK button to sort the transactions for that period.
• The Total Number of Tests will be displayed beneath the date range.
• After the sorting has completed the SAVE and PRINT buttons become active.
• Pressing the SAVE button opens the “Select USB Device” window. After highlighting the USB Device where the data is to be saved, the User can either press the NEXT button which opens the “Enter File Name” window, where after entering the file name used to save the data, or the CSV button or the PDF format button.
• The User also has the option to exit from the saving action by pressing the EXIT button.
• This opens a window enabling the User to enter the name of the file that will be used to save the Test Data on the USB Device. Press OK to complete the Data Saving action.(see Figure 59)
• Pressing PRINT opens the “FIND PRINTER” window for the User to select the Printer where the Test log will be printed. Press the PRINT button to print the Test Log, or the EXIT button to save the information. (see Figure 59)

Figure 59

• After Saving / Printing either the “TRANSACTIONS” or “TESTS” LOGS press the BACK Button to return to the SETTINGS Page.
- **FACTORY SETTINGS** - Pressing this button will open the FACTORY SETTINGS page. (see Figure 60)

![FACTORY SETTINGS](image)

**Figure 60**

- Displayed on the FACTORY SETTINGS page are the:
  - Date and Time (24 hour clock)
  - Factory Speed = 97
  - **RESET FACTORY DEFAULT**
    Pressing this button will reset the Factory Default speed to 97
  - **JOG WAND**
    This Button Permits the Administrator to manually Jog the Wand Motor
  - **Normal Wand Speed** Display Window
    This window permits the Administrator to set the Wand Speed at a value between 0 - 255
  - **Current Speed = XX**
    Based on the installed motor the Speed closest to the Factory Setting is Displayed here.
  - **GET NEW VALVE SPEED**
    Pressing this Button, the Administrator can determine the actual motor speed based on the specific installed motor.
  - **JOG WAND BOOST**
    Pressing this button will simulate the Boost Speed of the Wand between 0 – 255 this should be no greater than 55%
  - **“Boost Wand Speed” Display Window**
    This is where the Administrator can make minor adjustments in the BOOST speed, between 0 - 255
  - **EXIT**
    Pressing the button Exits the window and returns to the SETTINGS Window
  - **SET CLOCK**
    This button opens the “SET TIMESTAMP” where the Administrator can make adjustments in the Date and Clock setting.
  - **SUBMIT**
    Pressing this button Saves the Administrator settings.
Section 11: Optimizing Sieving Times

- The Mikro Air Jet Sieve® process can be optimized to save time when performing an analysis.
- To achieve the optimum time, select the finest Test Sieve Screen used during the analysis.
  - Place the same amount of sample, typically used, on the Test Sieve Screen and identify the total weight.
  - Manually record this weight.
  - Program (10) ten seconds into the “Sieving Time” (MAJSx²-a) or the “Time Remaining” (MAJSx²-b) and run the unit until it shuts off.
  - Brush any dust that accumulated on the Test Sieve Cover back into the Test Sieve Screen and weigh the Test Sieve Screen with the retained sample.
  - Manually record this weight and continue to repeat the ten-second increments, recording the weights, until you find you have three runs without any weight change.
  - Once the fine particles have been removed and the weight no longer reduces, the optimum time has been achieved.
  - The optimum time can then be set at twenty seconds shorter than the total length of your test protocol.
  - This optimum time can also be used on both fine as well as coarse opening Test Sieves Screens.

Section 12: Maintenance

Section 12-1: Disassembly and Cleaning

- The information contained here-in is intended to be a guide ONLY. Frequency and extent of cleaning depends on the user’s corporate policy, regularity of use, material and environment.
- Remove as much dry powder using a vacuum prior to starting the cleaning process.
- Use the MAJSx² “ON/OFF” power switch to the “Off” position, then un-plug the Jet Sieve from the power source and remove the power cable from the body.
- Using a sponge, cloth, etc., lightly wash the pan area of the MAJSx². Care should be used NOT to oversaturate the area such that liquid collects in the pan or discharge duct. An excessive amount of liquid will damage internal electronic and mechanical components. If a scouring pad or hard bristle brush, or similar are used, surface damage to the MAJSx² pan or discharge area will occur. As a result CAUTION must be used during cleaning.
- Recommended Air Jet Sieve Housing cleaning can be performed by using either a dry vacuum and or with a damp towel. In the event the damp towel method is used use a mild non-corrosive/non-abrasive solution. Additionally when selecting a solution care should be taken to prevent a reaction with any remaining powder residue.
- The exterior of the MAJSx² is to be wiped down using either the dry or damp cloth method. Under NO circumstance is the unit to be submerged or saturated with liquid.
- In the event the damp cloth method is used, the Air Jet Sieve should be permitted to dry thoroughly prior to resuming use of the instrument.
- Under NO circumstances is the MAJSx² to be subjected to steam sterilization.
- ONLY if authorized, remove the (4) mounting feet and the bottom plate. Inspect the vacuum pressure gauge filter, should there be an excess of collected powder clean the filter using compressed air and/or replace the filter.

**NOTE**

HMPS accepts no responsibility for damage to the instrument resulting from the cleaning process and/or misuse of cleaning solutions.
Section 12-2: Cleaning of Test Sieve Screens

- Test Sieve Screens must be cleaned periodically, especially those with fine openings.
- The frequency of cleaning depends on the characteristics of the powder and the number of times the Test Sieve Screens are used.
- After a period of time, particles can wedge themselves in the sieve cloth opening eventually blinding a portion of the Test Sieve Screen area.
- Once a week or more often if necessary, the Test Sieve Screens should be placed in an ultrasonic bath, for no longer than 1½ minutes, with a mild detergent water mixture (1 part detergent to 10 parts water).
- The Test Sieve Screen should be carefully (without contacting the sieve cloth) blown free of excess water using compressed air, remove the O-ring then placed in an oven with a temperature of 80°F to 100°F or allowed to fully air dry overnight.
- In some cases traces of water may still be present on the Test Sieve Screen.
- Place the Test Sieve Screen on the instrument and run the instrument without material permitting the vacuum system air to remove any of the remaining liquid traces.
- Should there be an excessive amount of liquid present DO NOT use the Test Sieve Screen.
- DO NOT leave the Test Sieve Screens in water/cleaning solution for long periods of time.
- The adhesive over time will degrade when subjected to long periods of liquid submersion.
- The Hosokawa Micron Test Sieve Screens are autoclavable and can be subjected to High temperatures (240°C) without damage to the frame and/or cloth.
- As a result placing them into an oven with the temperature between 80°F and 100°F will have no effect on the adhesive.
- DO NOT subject soldered Test Sieve Screens to temperatures above 150°F. Should this occur the solder may soften resulting in the loosening of the sieve cloth, ultimately permanently damaging the Test Sieve Screen.
- The Black O-ring should be removed from the sieve frame for either hand or ultrasonic bath cleaning with either isopropyl alcohol or a mild soap solution.
- When the ultrasonic bath method is used the test sieve gasket should NOT be submerged in the mild soap solution.
- Any excess liquid should be removed from the O-ring by using a lint free cloth and it is recommended that the O-ring be air dried overnight.
- In the event Isopropyl alcohol is used as the cleaning agent the Isopropyl alcohol should be applied by means of a spray and immediately removed thoroughly using a lint free cloth and/or compressed oil free air, then permitted to further air dry.
- The test sieve O-ring should NOT be placed in a high temperature oven for the purpose of accelerating the drying process.
- The test sieve O-ring should NOT be subjected to heat or liquid or air greater than 100°F.

**NOTE**

HMPS accepts no responsibility for damage to Test Sieve Screens resulting from misapplication, misuse and/or overheating during drying.

### Table: Cleaning Schedule

<table>
<thead>
<tr>
<th>Test Sieve Designation</th>
<th>Cleansing / Inspection Schedule (see notes)</th>
</tr>
</thead>
<tbody>
<tr>
<td>US Standard No. 4 to US Standard No. 18</td>
<td>20 uses or every 2 Months</td>
</tr>
<tr>
<td>US Standard No. 20 to US Standard No. 50</td>
<td>20 uses or every Month</td>
</tr>
<tr>
<td>US Standard No. 60 to US Standard No. 200</td>
<td>15 uses or every 3 Weeks</td>
</tr>
<tr>
<td>US Standard No. 230 to US Standard No. 325</td>
<td>10 uses or every 2 Weeks</td>
</tr>
<tr>
<td>US Standard No. 400 to US Standard No. 635</td>
<td>5 uses or every Week</td>
</tr>
</tbody>
</table>
### Section 12-3: Test Sieve Screen Selection Chart

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
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<th></th>
<th></th>
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<tbody>
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<td>4750</td>
<td>4000</td>
<td>4</td>
<td>M390-004999-CERT</td>
</tr>
</tbody>
</table>

- All Test Sieve Screens are constructed of stainless steel frame and cloth, individually packed and sealed and are supplied with a gasket and "O-Ring.
- When the Test Sieve Screen is used with the MAJSx, discard the BLUE gasket, use ONLY the BLACK "O-Ring".
- All Test Sieve Screens are certified to ASTM E11 Inspection grade standards and include a Certificate of Conformance and a Certified Histogram.
- Metric Alternative Test Sieve Screens (ISO 3310) are supplied with a Certificate of Conformance and a Certified Histogram "UPON REQUEST".
- All Listed Test Sieve are 200 mm diameter.
Section 12-4: Test Sieve Screen Statistical Data Terminology Chart

- The “Mean” is defined as the sum of all the values being considered by the total number of the values in the set.
- The “Median” is defined as the middle value in a set of numbers arranged in order of magnitude.
- The “Standard Deviation” is defined as follows:

\[
\delta = \sqrt{\frac{1}{N} \sum_{i=1}^{N} (X_i - \mu)^2}
\]

N = Number of values in the set
X = Individual reading
\( \mu \) = mean

The lower the value the more stable the material
- The “Range” is defined as the absolute difference between the maximum and the minimum value.

Section 12-5: Recommended Test Sieve Screen Recertification Schedule

<table>
<thead>
<tr>
<th>Test Sieve Designation</th>
<th>Certification Schedule (see notes)</th>
</tr>
</thead>
<tbody>
<tr>
<td>US Standard No. 4</td>
<td>100 uses or every 40 months</td>
</tr>
<tr>
<td>US Standard No. 5 to US Standard No. 18</td>
<td>75 uses or every 30 months</td>
</tr>
<tr>
<td>US Standard No. 20 to US Standard No. 50</td>
<td>60 uses or every 24 months</td>
</tr>
<tr>
<td>US Standard No. 60 to US Standard No. 120</td>
<td>50 uses or every 18 months</td>
</tr>
<tr>
<td>US Standard No. 140 to US Standard No. 200</td>
<td>40 uses or every 12 months</td>
</tr>
<tr>
<td>US Standard No. 230 to US Standard No. 325</td>
<td>30 uses or every 9 months</td>
</tr>
<tr>
<td>US Standard No. 400 to US Standard No. 635</td>
<td>20 uses or every 6 months</td>
</tr>
</tbody>
</table>

**NOTE**

- The above recommended re-certification schedule frequency is based on time and/or uses whichever occurs first.
- The above recommended re-certification schedule is intended to be a guide ONLY. Individual quality process requirements and usage will vary depending on environment, material characteristics and the specific testing requirements.
- Test Sieve Screens are precision testing tools. Should the Test Sieve Screen become damaged in any way it should be either recertified and/or replaced.
## Section 12-6: Troubleshooting

<table>
<thead>
<tr>
<th>Problem</th>
<th>Potential Solution</th>
</tr>
</thead>
</table>
| Cannot reach or maintain the desired Vacuum Pressure. | • The vacuum cleaner needs to be cleaned. replace ALL vacuum filters.  
• The internal air adjust gate between the air inlet and outlet duct needs to be cleaned.  
• The vacuum hose connection or vacuum hose is not installed correctly. Check and tighten. |
| The Vacuum Pressure exceeds the recommended operation range of "8 to 16" inches water column. (or equivalent). | • Install an additional air by-pass valve gate on the inlet air duct located on the back of the MAJSx² housing. |
| Excessive time to sieve samples. | • Inspect the sieve cloth by holding up to a light to determine if lodged particles are blinding the openings.  
• Clean Test Sieve Screen using an ultrasonic cleaner (bath). |
| The sample material clings to the Polycarbonate Sieve Cover, either due to fineness or electro-static charge.. | • Spray an anti-static agent on the Test Sieve Cover and dry with a paper towel. |
| Unit will not power. | • Confirm the power supply cord is connected to power receptacle properly.  
• Check and reset, if necessary the open-circuit breaker. |
| The software is not communicating with the between the MAJSx² and the balance. | • Confirm the installation of the proper RS232 cable.  
• Confirm the balance is using the default communication settings. |
| The MAJSx² IP Address is not display on the ADMIN Screen. | • The instrument is not connected to the network, either via hard wire or wireless.  
• Contact the local IT Department to confirm that the instrument is not rejected from the network.  
• If hard wired confirm the network cable is properly connected to the MAJSx².  
• If hard wired confirmed that the network cable is live.  
• Power down the MAJSx², wait approximately 15-20 seconds before attempting to re-energize the MAJSx².  
• Confirm the network signal strength by connecting a network power switch. |
| Cannot print | • Confirm the Printer IP Address was properly saved. |
Section 12-7: Critical Instrument Verification

12-7.1 Verification of Vacuum Gauge

- Place a modified Test Sieve Screen Polycarbonate Cover on the MAJSx\(^2\) housing.
- Connect a Certified External Pressure Gauge to the port of the modified Test Sieve Screen Polycarbonate Cover.
- In the Basic Operation mode enter 12 inch H\(_2\)O in the Pressure cell and 120 seconds in the “Time” cell.
- Press the “Start” button.
- After the Target Pressure is reached compare the value displayed on the MAJSx\(^2\) screen against the External Pressure Gauge.
- After the Target Pressure has been registered, press the STOP button.
- The reading on the External Pressure Gauge when compared with the MAJSx\(^2\) display should be ± (2) two inches water column (or equivalent).

12-7.2 Verification of Timer

- Use a Certified Stopwatch to verify the times.
- Place a modified Test Sieve Screen Polycarbonate Cover on the housing of the MAJSx\(^2\).
- In the Basic Operation mode enter 60 seconds (sec) in the “Time” cell
- Press START, once the Vacuum Pressure exceeds 7 inch water the MAJSx\(^2\) air wand will begin to rotate and the time will begin to reduce.
- As soon as the timer begins to reduce simultaneously press Start on the Stopwatch.
- The “Time” will continue to reduce until it reaches 0 (zero).
- Once 0 is reached simultaneously press stop on the Stopwatch.
- As a point of awareness the wand will stop rotating and the vacuum will shut off.
- Record the value displayed on the Stopwatch this should be 1:00 minute (60 seconds) ± 1.0% or 0.6 seconds.

**NOTE**

- If any of the values are out of range the unit **MUST** be returned for factory calibration.
- It is recommended that the verification of the Vacuum Gauge and Timer take place at a minimum of every twelve (12) months.

12-7.3 Calibration of Test Sieve Screens

- All Hosokawa Micron Powder Systems Test Sieve Screens are supplied with a Certificate of Conformance and a Certificate of Compliance (histogram) electron microscope confirmation of calibration accuracy.
- These certificates should be kept on file for reference.
- It is recommended that a second set of Certified Test Sieve Screens be purchased and used solely for the purpose of confirming the accuracy of the Test Sieve Screens.
- Refer to page 47 for the recommended recertification schedule.
Section 12-8: Recommended Operating Parameters

| Pneumatic Sieving Principle | To determine several points of an analyzed sample always begin with the finest micron opening (largest Sieve Screen No.: (mesh)) Test Sieve Screen when attempting to determine several points of the analyzed samples particle size distribution. |

12-8.1 Mikro Air Jet Sieve® (MAJSx²)

<table>
<thead>
<tr>
<th>Suggested Parameters</th>
<th>Test Sieve Screen diameter 200-203 mm</th>
</tr>
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<tbody>
<tr>
<td>Negative pressure beneath the sieve screen</td>
<td>≥ 20 micron</td>
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<tr>
<td>Pressure gauge value inches water column</td>
<td>8-16 inches</td>
</tr>
<tr>
<td>Airflow</td>
<td>87-97 CFM</td>
</tr>
</tbody>
</table>

12-8.2 Vacuum Pressure

- Monitoring and adjustment of the vacuum pressure is performed by a printed circuit board mounted pressure transducer and a motor controlled by an internal drive gate located between the inlet and outlet duct.
- For normal use, the vacuum pressure should be within the range of 8-16 inches of water column.
- In the event a lower vacuum pressure is required, it may be necessary to install an additional “Air By-Pass” fitting on the discharge air duct. Contact HMPS for additional details.

12-8.3 Sample Weight and Sieving Time.

**Suggested sieving values based on materials with a density of 2.65g/cm³**

<table>
<thead>
<tr>
<th>Test Diameter (mm)</th>
<th>Test Sieve (micron)</th>
<th>Sample Weight (grams)</th>
<th>Sieving Time (minutes)</th>
</tr>
</thead>
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<tr>
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<td>39 and Finer</td>
<td>50≥</td>
<td>5 – 6</td>
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<td></td>
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<td>20</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td></td>
<td>10</td>
<td>1 - 4</td>
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<td></td>
<td>40 and Greater</td>
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<td>10</td>
<td>1 – 3</td>
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12-8.4 Sieving of Difficult Material

<table>
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<tr>
<th>Sample Characteristic</th>
<th>Counter Action</th>
</tr>
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<tbody>
<tr>
<td>Hygroscopic</td>
<td>• Use conditioned air</td>
</tr>
<tr>
<td></td>
<td>• Dry the sample before and after analysis</td>
</tr>
<tr>
<td></td>
<td>• Shorten sieving time</td>
</tr>
<tr>
<td>Electrostatic</td>
<td>• In some cases it is preferred to mix an anti-static agent with the sample.</td>
</tr>
<tr>
<td></td>
<td>• HMPS suggests adding approximately 2% (sample weight) of “High Purity Silicon Dioxide”, which will adhere to the surface of the larger particles and act as a barrier thus reducing particle to particle cohesion which ultimately affects the static charge on the sample.</td>
</tr>
<tr>
<td></td>
<td>• In addition the use of a light coating of anti-static spray on the Test Sieve Polycarbonate Cover and the Test Sieve frame will reduce the electrostatic effect on these parts.</td>
</tr>
<tr>
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<td>• <strong>Caution</strong> should be taken to <strong>NOT</strong> get the antistatic spray on the screen cloth.</td>
</tr>
<tr>
<td>Sticky</td>
<td>• Difficulties may occur when attempting to sieve extremely fine or fatty materials.</td>
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<tr>
<td></td>
<td>• The addition of “Highly Dispersed Silica” has shown to reduce and/or eliminate these difficulties.</td>
</tr>
</tbody>
</table>

Section 12-9: Instructions for Connecting the Cyclone to the MASJx²

12-9.1 Adhere to the following Instruction steps:

- Remove the vacuum hose from the back “VACUUM” nozzle of the MAJSx².
- Attached one end of the supplied Cyclone hose to the “VACUUM” nozzle of the MAJSx².
- Attach the opposite end of the Cyclone hose to the inlet of the Cyclone, typically the side inlet of the Cyclone.
- Attach the end of the vacuum hose to the discharge port of the Cyclone, typically the top of the Cyclone.
- Depending upon the type/model of the Cyclone used it may be necessary to use a hose transition. If this is the case place the transition into each of the cyclone openings and connect the respective hose to the transitions.
- Attach the product collection jar and confirm that there are no air leaks. Leaks will affect the efficiency of the Cyclone.
- Follow the instruction included with the Cyclone (model VME 2.1) for proper assembly placement and mounting of the Cyclone.
Section 12-10: Instructions for Cleaning the Vacuum

- The vacuum cleaner should be cleaned regularly to maintain adequate system suction.
- Aside from emptying the vacuum collection container, the filters should be cleaned by vacuuming with another vacuum or by shaking off accumulated dust.
- Replacement of the collection bag or filters is product dependent and based on the frequency of use.
- Filter replacement should be performed at least once a year or as needed to comply with company requirements.

Section 12-11: Recommended Vacuum Filter Replacement

- Each filter is individually tested with DOP and is manufacturer certified before shipment.
- The contents of all cartons should be inspected carefully for freight or handling damage.
- The integrity of the “Absolute” filter could be compromised by a poor seal caused by careless handling or improper installation.
- The average service life of critical air filters is one (1) year under normal use, product characteristics can have an effect on filter longevity.
- The filters should be checked regularly.
- Adhere closely to the following manufacturer’s installation instructions.

Model 930/390

- Grasp the snap locks and pull them outward.
- Lift the lid up from the container.
- The pre-filter is located above the motor stand in the middle of the cleaner.
- Clean the sealing surfaces before reinstalling a new filter.
- All used filters, bags and debris must be treated as hazardous substance and must be disposed of in accordance with all federal, state and local regulations.

- The HEPA Filter is located inside the lid. Grasp the snap locking tabs and pull them outward.
- Lift the lid up from the container.
- Install the replacement HEPA filter into the cleaner with the “HEPA” label facing outward.
- Make sure the filter holder is securely attached at all four (4) points (locking tabs) around the lid.
- Replace the lid on the vacuum container and secure the lid using the snap locks
Model 30

Empty Dirt Tank
- Remove the upper section of the cleaner from the dirt tank.
- Hold the dirt tank at the grip underneath the tank and tip out the dirt.
- Dispose of the dirt in accordance with legal regulations.
- Clean the rim of the tank before fitting the upper section of the cleaner.
- Before reinserting the suction hose; clean the inlet fitting and hose collar.

Replace Filter Bag
- Remove the upper section of the cleaner from the dirt tank.
- Carefully remove the filter bag connection from the inlet fitting.
- Close the filter bag connection with the slide.
- Dispose of the filter bag in accordance with local regulations.
- Place a new filter bag into the clean tank as described in the instructions, printed on the filter bag. IMPORTANT: Press the filter bag connection firmly on to the inlet fitting.

Replace Filter Element
- Remove the upper section of the cleaner from the dirt tank and position the upper section so that the filter element is facing upwards.
- Turn the filter holder counter-clockwise and remove the holder.
- Carefully remove the filter element and dispose the element in accordance with Local regulations.
- Fit a new filter element into place.
- Check the floater (1) for proper operation, when turning the holder the floater should move back and forth easily.
- Fit the holder into position and turn it clockwise to secure it into place.

CAUTION!
Never use the vacuum cleaner without a filter properly in place..
Model 118

- Remove the motor head assembly from the main body of the vacuum.
- Remove the existing HEPA filter (4) by rotating the handle (5) located at the bottom of the motor head assembly.
- Insert the replacement HEPA filter (4) to the motor head assembly by locating over the mounting area pin (1 & 2).
- Tighten the handle (5) to seat and securely mount the HEPA filter to the motor head assembly.

**NOTICE**

- HMPS Accepts NO responsibility for damage to the vacuum, vacuum filters and/or the HEPA filters resulting from the replacement process and/or mishandling.
- In addition to the above instructions, the manufacturer’s instructions included with the vacuum are to be followed.
Section 13: Aftermarket Services

Thank you for choosing Hosokawa Micron Powder Systems as your supplier of powder analysis equipment.

As a Hosokawa Micron Powder Systems customer, you receive much more than high quality equipment and spare parts. Your purchase is supported by our extensive resources and more than seventy years of applicants’ experience, all of which are combined in our Aftermarket Services team.

We will work with your operators, engineers and managers to keep your powder analysis equipment up and running.

For technical assistance, please call 1-800-526-4491 or contact the specific specialist responsible for your geographic territory, as listed on the following page. Additional information about the services we offer is available on our website www.hmicronpowder.com.

<table>
<thead>
<tr>
<th>PROCESS TECHNOLOGY</th>
<th>MECHANICAL FIELD SERVICE</th>
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<tbody>
<tr>
<td>Our Process Technology Department consists of engineers who are dedicated to providing state-of-the-art powder processing assistance.</td>
<td>Our Mechanical Field Service group has been through extensive training and have experience providing:</td>
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<tr>
<td>System optimization</td>
<td>Mechanical start-up</td>
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<td>Process troubleshooting</td>
<td>Mechanical repair</td>
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<td>Technical seminars</td>
<td>Maintenance seminars</td>
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<td>Installation consultation</td>
<td>Mechanical inspections/evaluations</td>
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<td>System upgrades</td>
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<tr>
<th>ELECTRICAL DESIGN/CONTROLS</th>
<th>SPARE PARTS</th>
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<td>Our Electrical Design/Controls Department designs all of our control systems, from basic relay logic to automated PLC-based systems.</td>
<td>Our Spare Parts Department works closely with our Procurement and Manufacturing personnel to ensure promptness of spare parts order deliveries.</td>
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<tr>
<td>Electrical start-up assistance</td>
<td>Blanket spare parts orders</td>
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<tr>
<td>Electrical repair or troubleshooting</td>
<td>In-house factory repairs</td>
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<tr>
<td>Control System consultation</td>
<td>In-house rebuilds/refurbishing</td>
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<td>Control System upgrades</td>
<td>Quantity discounts</td>
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<td>24-hour delivery of stock items</td>
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Section 13-1: Aftermarket Service Regional Parts Coordinators

Aftermarket Spare Parts Contact:

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<th>State</th>
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Air Jet Sieve Repairs Contact:

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<thead>
<tr>
<th>Name</th>
<th>Phone</th>
<th>Email</th>
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<tbody>
<tr>
<td>Ginny Koleda</td>
<td>908-277-9249</td>
<td><a href="mailto:gkoleda@hmps.hosokawa.com">gkoleda@hmps.hosokawa.com</a></td>
</tr>
<tr>
<td>Trevor Corrado</td>
<td>908-277-9331</td>
<td><a href="mailto:tcorrado@hmps.hosokawa.com">tcorrado@hmps.hosokawa.com</a></td>
</tr>
<tr>
<td>Tim Calvo</td>
<td>908-277-9215</td>
<td><a href="mailto:tcalvo@hmps.hosokawa.com">tcalvo@hmps.hosokawa.com</a></td>
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