KSI CONVEYORS, INC.
KSi Automation

KSi AutoTreat V3.2
System User's Manual
Do not attempt to operate or maintain this panel(s) until you have read and thoroughly understand all of the safety information contained in this manual. All such information must be taken seriously. This panel contains high voltage which can cause serious injury or death. If you do not understand any part of this manual, seek assistance from your supervisor or call KSi Conveyors, Inc. before operating this equipment.
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Thank you for choosing KSi Conveyors, Inc. for your automation needs. We appreciate your business and will work diligently to ensure that you are satisfied with your choice.

Document Scope & Purpose

This document describes the logic and control functions provided by the control software. It includes sequence of operations for the PLC. It does not cover any equipment controlled by the panel. Safety and other necessary information should be included in the documentation for those specific components.

This manual is not intended to provide instruction on specific applications of the equipment nor on the safety practices common to your industry.

Owner Responsibilities

As the purchaser/owner/integrator of this equipment and control system, you have an obligation to design, install, operate and maintain the equipment in a manner that minimizes the exposure of people in your care to any potential hazards inherent in using this control system and associated equipment. This control panel(s) is a component of a process stream. It works together with other components to form a complete system. It cannot operate as a standalone component. Therefore it is critical that the owner of this equipment and control system:

- Has a clear and documented understanding of the process this panel is being used in, and of any resulting hazards or special requirements arising from this specific application.
- Allow only properly trained and instructed personnel to install, operate or service this equipment.
- Maintain a comprehensive safety program involving all who work with this panel(s) and other associated process equipment.
Establish clear areas of staff responsibility (e.g. operation, setup, sanitation, maintenance and repairs).

Perform an electrical hazard analysis to determine the Incident Energy Exposure to select the level of personal protection equipment and to determine the Flash Boundary. Refer to NFPA 70E for further information.

Provide all personnel with the necessary safety equipment.

Periodically inspect the equipment to ensure that the doors, covers, guards and safety devices are in place and functioning, that all safety instructions and warning labels are intact and legible and that the equipment is in good working order.

In addition to the operating instructions, observe and enforce all applicable legal and other binding regulations, national and local codes.

Install the panel(s) in the process stream in accordance with the guidelines outlined in the chapter titled “Installation”.
Operator Responsibilities

As the person with the most to gain or lose from working safely, it is important that you work responsibly and stay alert. By following a few simple rules, you can prevent an accident that could injure or kill you or a co-worker.

- Disconnect, lockout and tagout electrical and all other energy sources before inspecting, cleaning, servicing, repairing or performing any other activity that exposes you to an electrical hazard.

- Do not operate, clean or service this panel until you have read and understood the contents of this manual. If you do not understand the information in this manual, bring it to the attention of your supervisor or call KSi Conveyors, Inc. for assistance.

- Understand and follow the safety practices required by your employer and this manual.

- Do no attempt to perform electrical work if you are not an electrically qualified worker. Know your limitations and do not attempt to perform electrical work beyond what you are capable of doing safely.

- Wear the appropriate personal protection equipment and use the appropriate tools for the electrical work to be performed.

- **PAY ATTENTION** to what you and other personnel are doing and to how these activities may affect your safety.

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**WARNING**

Failure to follow these instructions may result in serious personal injury or death.
Receiving Your Equipment

As soon as the panel is received, it should be carefully inspected to make certain the unit sustained no damage during shipment and that all items listed on the packing list are accounted for. All damage or shortages should be noted on the Bill of Lading. The purchaser must take immediate steps to file reports and damage claims with the carrier. All damages incurred during transit are the responsibility of the common carrier if the equipment was shipped FOB. Ownership passes to purchaser when the unit is loaded and accepted by carrier. By law, any claims for in-transit damage or shortage must be brought against the carrier by the purchaser.

Handling and Storage of Your Equipment

If the panel is not going to be installed soon after arrival, it should be stored in a dry location to protect against rust and corrosion. The panel is shipped from the factory mounted in a heavy shipping crate to prevent foreign materials and moisture from contaminating the panel during shipping. It is recommended that the panel remain in the crate until just prior to installation. Transport the panel from the unloading site to the installation or storage site by using a forklift or hand-truck. The panel should be picked up by the crate, not by the panel itself.
2 - Safety Information

*Alerts, symbols, warnings and cautions for safe operation of the equipment.*

Every year, accidents in the workplace injure, maim and kill people. Some of these accidents involve electrical shock or arc flash. Although it may be impossible to prevent all accidents, those involving electrocution are completely preventable with the right combination of training, operating practices, safety devices and operator vigilance. The purpose of this section is to help educate panel users about potential hazards, unsafe practices and recommend hazard avoidance techniques.

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**WARNING**

Do not attempt to operate or maintain this panel(s) until you have read and thoroughly understand all of the safety information contained in this manual. All such information must be taken seriously. This panel contains high voltage which can cause serious injury or death. If you do not understand any part of this manual, seek assistance from your supervisor or call KSi Conveyors, Inc. before operating this equipment.

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**Signal Words and Symbols**

It is very important that operators and maintenance personnel understand the words and symbols that are used to communicate safety information. Signal words, their meaning and format have been standardized for U.S. manufacturers and published by ANSI. The European Community (E.C.) has adopted a different format based on the International Standards Organization (I.S.O.) and applicable machinery directives. Both formats are presented below.
Graphic symbols are not standardized, but most manufacturers will use some variation of the ones seen in this manual.

**DANGER** Indicates an imminently hazardous situation which, if not avoided, will result in death or serious injury.

**WARNING** Indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.

**CAUTION** Indicates a potentially hazardous situation which, if not avoided, may result in minor or moderate injury and/or property damage.

**SAFETY INSTRUCTIONS** Provides additional information that the operator needs to be aware of to avoid a potentially hazardous situation.

**Mandatory Lockout Power Symbol.** Disconnect, lockout and tagout electrical and all other energy sources before inspecting, cleaning or performing maintenance on this panel.

**International Safety Alert Symbol.** The exclamation point (!) surrounded by a yellow triangle indicates that an injury hazard exists. However, it does not indicate the seriousness of the potential injury. An exclamation point (!) is used with the DANGER, WARNING and CAUTION warnings. When used in conjunction with these symbols the potential injury is indicated.

**Electrocution Hazard Symbol.** This symbol indicates that an electrocution hazard exists. Serious injury or death could result from contacting high voltage.

**Electrocution Hazard Symbol.** (ISO format) This symbol indicates that an electrocution hazard exists. Serious injury or death could result from contacting high voltage points.
**Mandatory Lockout Tagout Action Symbol** (I.S.O. format). This symbol instructs the operator to disconnect, lockout and tagout all electrical power and other energy sources before inspecting, servicing or cleaning a panel.

**Mandatory Read Manual Action Symbol** (I.S.O. format). This symbol instructs personnel to read the Operator Manual before servicing or operating this panel.

**Mandatory Read Manual Action Symbol**. This symbol instructs personnel to read the Operators Manual before servicing or operating this panel.

This symbol indicates that an important maintenance or installation detail is being described. Special notice should be taken to heed the instructions to prevent damage to the equipment.

This symbol indicates that there is an arc flash explosion danger. Arc flash explosions can release tremendous amounts of energy instantaneously. This can propel debris, vaporized metal and extremely hot gases at very high velocities. Serious injuries, burns or death could result from being in close proximity to or in the direct path of an arc flash explosion and the flying debris.
This symbol indicates that appropriate personal protection equipment and clothing are required before inspecting, servicing or cleaning the control panel. Employees must wear and be trained in the use of appropriate protective equipment for possible electrical hazards they may face. Examples of protective equipment could include a hard hat, face shield, flame resistant neck protection, ear protectors, Nomex™ suit, insulated rubber gloves with leather protectors, and insulated leather footwear. All protective equipment must meet the requirements as shown in the latest edition of NFPA 70E. Protective equipment, sufficient for protection against the potential electrical flash, is required for every part of the body. The selection of the required thermal rated PPE depends on the incident energy level at the point of work.

This symbol indicates that only qualified personnel should inspect or service this panel and the connected electrical components. A qualified worker is someone who has the skill, knowledge, and ability to safely perform the work to which they are assigned.
Warning Signs

Warning signs are placed on the panel(s) to serve as reminders to anyone who is working on or near the panel that they must be careful and exercise proper care to avoid serious personal injuries, death or equipment damage. The warning signs that are commonly found on the control panels are described below. These signs should be inspected periodically by the Owner to make sure that all of the warning signs are in place and legible. If any of the warning signs are damaged or become illegible, please contact KSi Conveyors, Inc. for replacement signs.

Arc Flash Sign

This sign is designed to remind personnel working on or near this control panel of the electrical shock and arc flash explosion hazards. It also indicates key hazard avoidance techniques as well as ways to reduce the severity of potential injuries through the use of proper personal protection equipment.
Multiple Power Sources

This sign indicates that the panel may be powered from more than one source. All sources of power must be properly locked out and tagged out before the panel is fully de-energized.

UPS Voltage Sign

This sign indicates that there is an uninterruptible power supply in the panel (UPS) that will continue to provide a power source even if the primary power source to the panel is off. The UPS must be properly locked out and tagged out before the panel is fully de-energized.
Incoming Power Hazard

This sign informs the electrical worker that the incoming power to the panel remains energized even when the main disconnect is in the “ON or “OFF” position. It will remain energized until the panel power source is de-energized and properly locked out.

Panel Clearance Sign

This sign informs the owner that there is an OSHA and NEC requirement that space in front of the panel be kept clear for a minimum of 36 inches. The owner should consult these standards for additional information and guidance regarding this requirement.
Terms

Unless expressly stated elsewhere, the following terms shall have the meanings indicated below.

**Alternate Method**—A deviation from established procedures or policy that includes compensatory measures that assure equivalent objectives can be achieved by establishing and maintaining effective safety.

**Approved**—The result of a process implemented by qualified electrical workers or qualified supervisor that control measures effectively mitigate the electrical hazards associated with a task.

**Approved Equipment**—(1) listed equipment, or (2) unlisted equipment that is acceptable to the qualified workers who designed or will use the equipment and that is approved by Owner.

**Authorized Work**—Electrical work that a supervisor has permitted the qualified electrical worker(s) to perform based on an approved safe work procedure and appropriate work practices.

**Barrier**—A physical obstruction that is intended to prevent contact with exposed energized electrical conductors or circuit parts. Barriers can be temporary or permanent.

**Clarify**—To make codes, standards, and regulations understandable and free from confusion through an oral or written process.

**Compelling Reason**—The reason for authorizing workers to perform work on or near hazardous energized electrical circuit parts. The reasons include two types:

- increased or additional hazards of de-energizing critical systems; and
- unfeasible due to equipment design or operational limitations (e.g., testing of electric circuits that can only be performed with the circuit energized).

**Conductive**—Any material suitable for carrying electric current.

**Contract Personnel/Worker**—Individuals whose services are obtained from subcontractors and who are supervised by the Owner’s employees. Contract personnel are not employees of the Owner.

**Critical Systems**—Any system which would result in increased or additional hazards if de-energized, e.g., life support equipment, emergency alarm systems, hazardous location ventilation equipment, area lighting.

**De-Energized**—Free from any electrical connection to a source of potential difference and from electrical charge; not having a potential different from that of the earth. A state in which the conductor or circuit part to be worked on or near has been disconnected from energized parts, locked out and tagged out in accordance with established standards, tested/verified to ensure the absence of voltage, and grounded if determined necessary.

**Electrical Hazard**—A dangerous condition such that inadvertent or unintentional contact or equipment failure can result in shock, arc flash-burn, thermal burn, or blast.

**Electrical Safety**—Recognizing hazards associated with the use of electrical energy and
SAFETY

taking precautions so that hazards do not cause injury or death.

**Electrical One-Line Diagram**—A record of all power sources to electrical equipment.

**Electrical Work**—(1) working on or near energized electrical parts; (2) servicing or maintenance of potentially hazardous electrical equipment.

**Electrically Qualified Worker**—A worker who has successfully passed a formal electrical training program and has been determined by his/her supervisor to have the skill, knowledge, and abilities to safely perform the work to which he/she is assigned.

**Energized**—Electrically connected to a source of potential difference, or electrically charged to have a potential significantly different from that of earth in the vicinity. NOTE: “De-energized” parts that have not been verified and locked out and tagged out in accordance with established standards are considered energized.

**Flash Hazard**—A dangerous condition associated with the release of energy caused by an arc that suddenly and violently changes material(s) into a vapor.

**Hazardous Electrical Work**—All electrical operations in which workers may be exposed to an electrical hazard.

**Insulated**—Separated from other conducting surfaces by a dielectric (including airspace) offering a high resistance to the passage of current.

**Listed Equipment**—Equipment that meets nationally recognized standards. All listed equipment is approved for use consistent with the manufacturer’s instructions.

**Live Parts**—Electric conductors, busses, terminals, or components that are uninsulated or exposed and a shock hazard exists.

**Safety Watch**—A safety watch is a more stringent hazard control measure than the two-person rule and shall be implemented when there are grave consequences from a failure to follow safe-work procedures. The safety watch shall be a qualified electrical worker who must be responsible for monitoring qualified worker(s) performing high-hazard electrical work.

**Shock Hazard**—A dangerous condition associated with the release of energy caused by contact or approach to exposed electrical conductors or circuit parts nearer than the minimum air insulation distance.

**Standard Operating Procedure (SOP)** — A document which records the review of an operation to (1) identify the equipment, hazards, and operating limits that are present in the operation; (2) develop control measures that eliminate unacceptable risks; and (3) describe how an operation is to be safely performed.

**Subcontractors**—A party entering into a subcontract with the Owner.

**Two-Person Rule**—The requirement for two qualified electrical workers to be present in the workplace and to be aware of the other worker's task while performing electrically hazardous work.

**Working Near**—Any activity inside the limited approach boundary or the flash protection boundary (see NFPA 70E) of exposed energized electrical conductors or circuit parts that are not put into an electrically safe work condition.
SAFETY

Working On—Coming in contact with exposed energized electrical conductors or circuit parts with the hands, feet, or other body parts, with tools, probes, or with test equipment, regardless of the personal protective equipment a person is wearing.

100% Rule—Work on or near energized parts must be performed only after all participating qualified electrical workers are in 100% agreement on the work to be completed, on the sequence in which it should be performed, and that the hazards are fully controlled or mitigated.
Important Codes and Standards for Owners

There are many codes and standards that apply to the owner of this panel. These include both national and local standards and codes. It is the Owner’s responsibility to identify and follow all applicable codes and standards. Listed below are several of the key national standards. This list is not a complete list of all applicable standards.

OSHA 1910.147

Control of this equipment must be in accordance with OSHA Standard 1910.147 "The control of hazardous energy (lockout-tagout)". This standard "requires employers to establish a program and utilize procedures for affixing appropriate lockout devices or tagout devices to energy isolating devices and to otherwise disable machines or equipment to prevent unexpected energizing, start-up or release of stored energy in order to prevent injury to employees". For further information on Lockout-Tagout requirements, see your company’s Safety Director or refer to OSHA Standard 1910.147.

110.16 Flash Protection Field Marking

110.16 Flash Protection. Switchboards, panel boards, industrial control panels, and motor control centers in other than dwelling occupancies that are likely to require examination, adjustment, servicing or maintenance while energized, shall be field marked to warn qualified persons of potential electric arc flash hazards. The marking shall be located so as to be clearly visible to qualified persons before examination, adjustment, servicing, or maintenance of the equipment.

FPN No. 1: NFPA 70E-2000, Electrical Safety Requirements for Employee Workplace, provides assistance in determining severity of potential exposure, planning safe work practices, and selecting personal protective equipment.

FPN No. 2: ANSI Z535.4-2002, Product Safety Signs and Labels, provides guidelines for the design of safety signs and labels for application to products.
NFPA 79

NFPA 79 provides guidance for industrial control panels. The following Emergency Stop definitions come from this standard.

**Emergency-Stop**

Actuators of emergency stop devices shall be colored RED. The background immediately around the device actuator shall be colored YELLOW. The actuator of a push-button-operated device shall be of the palm or mushroom-head type.

**Category-0 Stop**

Where a Category 0 stop is used for the emergency stop function, it shall have only hardwired electromechanical components. In addition, its operation shall not depend on electronic logic (hardware or software) or the transmission of commands over a communications network or link.

**Controlled Stop**

The stopping of machine motion by reducing the electrical command signal to 0 once the stop signal has been recognized by the control but retaining power to the machine actuators during the stopping process. (IEC 204-1 and NFPA 79).
Hazard Review and Safety Instructions

ARC FLASH HAZARD

DANGER

Serious injuries, burns or death could result from being in close proximity to or in the direct path of an arc flash explosion and the flying debris.

Arc flash accidents are most likely to occur during maintenance of the electrical system or when working on or near energized high voltage sources. This hazard does not exist when all electrical power sources have been disconnected, properly locked and tagged out. Serious injuries, burns or death could result from being in close proximity to or in the direct path of an arc flash explosion and the flying debris.

ELECTROCUTION HAZARD

DANGER

Severe burns or death may result from contact with exposed high voltage sources.

Electrocution accidents are most likely to occur during maintenance of the electrical system or when working on or near energized high voltage sources. This hazard does not exist when the electrical power has been disconnected, properly locked and tagged out.

AUTOMATIC START HAZARD

WARNING

Equipment controlled by this panel may start without warning, causing serious injury. STAY CLEAR.
Process equipment is usually controlled by an automated system and may start without warning. However, automatic startup by itself is not a hazard. Failure to properly disconnect, lockout and tagout all energy sources while inspecting, servicing or maintaining remotely controlled equipment creates a very hazardous situation. Serious personal injury may result. Always lockout and tagout all process equipment before inspecting, servicing or maintaining remotely controlled equipment.
3 - Operator Controls

General Description of the system Equipment and Operation.

This control system is designed to automatically control the bulk seed site, seed transfer equipment, providing automatic batch control and information printout when a job is complete.

General Control Panel Description

The system consists of one control panels as follows:

- Main Panel - This panel houses the PLC, I/O, and Operator Interface devices. Motor starters, main disconnect, power distribution, and control power transformer are also located in this enclosure. In a few cases the motor control has been moved to its own panel for remote mounting. In this case a second enclosure is used, the same specifications as below will apply to the separate motor starter panel.
General Panel Specifications

Some general specifications that apply to the above panel include:

1) NEMA 4 steel enclosure
2) Ground lug
3) Wire Color (From NFPA 79)
   a) GREEN (with or without one or more YELLOW stripes): shall be used to identify the equipment grounding conductor where insulated or covered.
   b) BLACK: Ungrounded line, load, and control conductors at line voltage.
   c) RED: Ungrounded ac control conductors, at less than line voltage.
   d) BLUE: Ungrounded dc control conductors.
   e) YELLOW: Ungrounded control circuit conductors that may remain energized when the main disconnecting means is in the OFF position. These conductors shall be YELLOW throughout the entire circuit, including wiring in the control panel and the external field wiring.
   f) WHITE or NATURAL GRAY: Grounded circuit conductor.
   g) BLUE WITH WHITE STRIPE: Grounded (current-carrying) dc circuit conductors.
   h) WHITE WITH YELLOW STRIPE: Grounded (current-carrying) ac control circuit conductors that remain energized when the disconnecting means is in the OFF position. For additional circuits powered from different sources that remain energized when the main disconnecting means is in the OFF position, striping colors other than GREEN, YELLOW or BLUE shall be used for the unique identification of the grounded conductors.
4) Terminal Colors -- Same as wire colors above.
5) Estop -- A Category 0 Estop is used.
Summary of Terms

- **KSi AutoTreat** – KSi batching and treating controls fully integrated into one touch screen operator interface.
- **KSi AutoBatch** – KSi batching controls. (has all the same features as KSi AutoTreat less all the treater controls)
- **KSi AutoData** – KSi’s database solution that gives you the ability to pre-enter orders from any computer on the panels network. All jobs are recorded back to the database to give you access to viewing past transactions.
- **KSi VariRate** – Seed metering function that measures seed flow rate by looking at the declining weight from the scale and uses a variable opening gate on the scale discharge to adjust the flow rate to match the user input desired treating rate. It also matches the treatment flow to that seed flow rate on a continuous basis.
- **KSi MultiFlow** – KSi’s dual scale system that allows for continuous treating as well as queuing and staging of jobs.
  - **Queuing** – Allows multiple orders to be queued up (lined up) so that as soon as a scale is available the system will automatically begin batching the next customer’s order.
  - **Staging** – Allows an order to be staged in 1 scale hopper while the system runs another order through the available scale hopper
- **Order** – A certain amount of a particular seed and a specified treatment that you want to run for a particular customer.
- **Tank Setup Parameters** – Settings that are related to a specific seed source. Seed ID, Lot ID, Preact, Discharge Rate, seed cal weight, seed wheel final adjust factor.
- **Preact** – The amount of seed between a tank gate and the scale. KSi Automation will close the tank gate this many pounds early in the order to land on the target order amount.
- **Tank Discharge Rate** – The lbs/min rate that seed is running between the tank and scale. KSi Automation uses this rate to determine how long to open the tank gate when ordering an amount less than the Preact.
- **IPAC** – IP Pump package controlled by KSi AutoTreat
- **Seed Wheel Final Adjust Factor** – The value that is used for fine tuning the seed wheel to correct for differences in seed quantity between what the seed wheel thinks it is delivering and what the scale is measuring.
- **Seed Cal Weight** – Quantity of seed (grams) contained in the Bayer/Gustafson seed calibration cylinder. KSi AutoTreat uses this number to determine how fast to turn the seed wheel to deliver the seed rate that has been asked for.
- **Discharge Shot Control** – The ability to discharge the scale hopper in “shots”. Example, discharge a 5000 lb scale in two 2500 lb shots.
- **Auto-Discharge** – Sets the discharge conveyors, including the treater inlet and outlet conveyors, to turn on and off automatically based on when the process needs them to run.
Detailed Control Panel Descriptions

More detailed outlines of the various controls used on this job are as follows:

**MAIN PANEL**

This control panel houses the main controller, associated I/O, and motor control for this seed transfer system. The controller is an Automation Direct, Direct Logic 06 and may include expansion modules. Motor starters are located on this panel and power supply requirements will be noted and labeled above the main disconnect. It uses a NEMA 4 enclosure and external components. Operator interface for this system is exclusively through operators and a C-More 8” Touch Screen on the door of the enclosure. Interface functions are explained below.

**Push Buttons**

ESTOP - Category 0 controls the power to the PLC outputs including the motor starters. Control Power is maintained on the PLC CPU even when the ESTOP is engaged. Push the button to engage and pull the button to release. The button is not illuminated while depressed.
**Device Screen Control**

Each system device has a graphical representation that will indicate what should be happening with that actual device in the process. In this case the air gate KG101 is open and the underbin M100 is running as shown by the green graphics.

All devices are represented by a unique device ID that also doubles as a button to open the HOA control for that device. The device ID tag will be used for all associated information throughout the project.

In the example shown, KG102 HOA was accessed by touching the KG102 device ID tag on the Tank Screen. Once the KG102 HOA control is open the operator is able to force the gate “OPEN”, “CLOSE”, or into “AUTO”. “OPEN” and “CLOSE” over ride all other control except E-STOP and Pause. It must remain in “AUTO” for normal automatic operation.

The example to the left shows HOA controls for a typical motor. In this case we are showing M101, which is the scale fill conveyor. Whereas the gate had options for Open/Close/Auto, a motor has options for Hand/Off/Auto. “Hand” turns the conveyor on, “Off” turns the conveyor off and “Auto” puts the motor back into Auto mode so that the computer will turn the motor on or off based on when the motor needs to run. You will notice that there is also a “RESET” for the motor. Anytime that a device has proof logic and faults this is where you must go to reset that individual device fault.
Some devices, such as the underbin and some treater devices, allows for the motor to be reversed. We show here the HOA control for M100. Again this was opened by touching the device ID tag on the Tank Screen. In this case we can force the motor on by using “FWRD” or “RVRS” or off by using “OFF”. This also must be in “AUTO” for normal automatic operation.

Some devices also allow speed control of the motor. The image on the left shows the HOA for the drum, MTR500. Notice that there is a slider bar in addition to the FWRD, RVRS, OFF, AUTO, RESET and EXIT Buttons. This slider allows you to adjust the speed up (top of the bar) or down (bottom of the bar). The slider is adjusted by selecting and dragging the slider up or down.

In the case of a device fault, the device will change on screen to indicate the fault. In the case of a motor fault you will see the circle at either end will be red and also wording that states that the motor has faulted. In the image to the left you can see that M100 has faulted. If the motor is running this circle will be green and if it is idle it will be black.
Navigation Control

First, we have provided three methods of screen navigation for your convenience. First, each main screen has been given a Navigation Bar on the top of the screen that allows you to move to any screen from any other screen.

Screen Menu:

Support Menu:

KSi Menu:

Second, there is also a hot link button on the System Menu at the end of the flow on one screen that will take you to the next screen in the product flow. On each screen you will find a button where the product enters and exits the screen. In the image on the left you can see that there is a hot link button under the scale on the Scale page that will allow you to navigate to either the treater page or the load out page.

The third method of navigation is that you can also navigate to any Screen Menu from the System Status Screen. The System Status page is a system overview screen and you can navigate to any of the devices you see on this screen simply by pressing directly on the device.
Throughout the screen operation you will notice that some features are pass code protected. This was done to bring awareness to a potentially risky operator command. During startup these risks were explained and most of the time you will not need to be concerned. The default pass code in all cases is “777” unless we were asked to change it on startup. In the event that it was changed, record the new pass code here:______. 
Home Screen

The Home Screen is both the order entry screen and the screen where you start and end jobs as well as print tickets. In addition to loading or creating jobs from this screen you can also add/edit customers and add/edit recipes. When customers and recipes are edited or created from the touch screen they are also saved back to the database. The bottom of the screen has the System Control bar that has controls pertaining to running a job. Also, on the very bottom of this screen is where you can change the applicator name by pressing directly on the applicator name which pulls up a keyboard for you to enter in an applicator name (this name can be changed from any screen that shows this text). This applicator prints on the ticket and is recorded back to the database for each transaction.
**SYSTEM CONTROL** is your main point of control when running a job. Here you can start, pause or end jobs. The following are descriptions of the buttons on this control bar:

- **Global Auto** – Pressing this puts all the devices, motors and air gates, into auto mode to be controlled by the system (it is good practice to press Global Auto before every job).

- **Master Start** – Press this to start the job, once started the button cannot be pressed until a new job is ready to begin. While a job is running the text changes to show that an order is running and the time the job started.

- **Auto End** – While the scale is filling and you want to end the job, press Auto End and the tank gate will close and the conveyors will clean out and wait for the scale to be discharged.

- **Tank XX Enable** – Once a job is started by pressing Master Start, you need to press the Tank Enable button to open the tank gate. Once this is pressed the tank gate will open and the scale will begin filling to the desired target wait.

- **System Print** – When a Job is complete this button changes to “Master Print” which is what you press to print a ticket to the slip ticket printer. When a job is not running, you can press “System Print” which will bring up an option to print the loaded order to a windows printer that is installed on the server computer. This is what you press to print an order receipt to a windows printer (allows you to print a receipt to an 8 ½ X 11 paper)

- **System Pause** – The system pause button (also shows on the main navigation bar along the top of every screen) pauses the entire system. When this is paused this button will flash red and yellow and to unpause the system simply press System Pause again and the job will resume where it left off when it was paused.

- **System Status** – This button takes you to the system status overview screen that allows you to see an overview of the entire system and what is running.
SYSTEM STATUS MESSAGE BAR

When a job is running, the run status will display a live update of the current system activity. If you have questions on what the system is doing or why it is behaving a certain way, the best thing to do is to return to the homepage and check the run status message bar to find out exactly what stage the system is in or what the system is waiting on.

In the example above, you can see that an order is started and the system is waiting for an operator to enable a tank. As soon as the “Tank 1 Enable” button is pressed this message will go away and be replaced with a new message telling the operation what the system is doing.

In the example above, you can see that an order is complete by the text “Order Run Complete” and the system is waiting for the operator to print a ticket, “Please print ticket now”. Notice that the “System Print” button has changed to “Master Print”. To print a ticket press this “Master Print” button and the slip ticket printer will begin printing.
**Screen Menu**

There are 7 sub menus under the “SCREEN MENU” button:

![Screen Menu](image)

**Screen Menu: Tank Fill (No Overbin)**

This page is where you go to control your tank fill conveyors. Each of these can be started independently of each other by turning them on in hand or they can be put in auto and started together by pressing the Auto Bin Fill “Start” button. When using the auto mode the 2 tank fill conveyors are interlocked together, so if M104 shuts down, M103 automatically shuts down as well. A remote with a Start and Stop button is provided with the automation package that allows you to start and stop these conveyors from outside by the tanks. If your site has an overbin these graphics would display the overbin conveyor and this is where the overbin would be controlled as well. If your automation system does not have tank fill controls then this page will not be used.
If your system has an overbin, your Tank fill page will look like the above image. In addition to the two bin fill conveyors, there is also M109 and M110. M109 is the overbin conveyor control and M110 is the overbin diverter control. M110 can be ran in hand forward or reverse and will need to be lined up directly overtop one of the tanks before you begin filling your tanks. Your overbin is installed with whisker switches over every tank that tells the automation system which tank the overbin diverter is currently over. This allows for the overbin diverter to automatically move to the selected tank. Notice that each tank has a “Select” button. When this button is pressed, and when M110 is in auto mode, the overbin diverter will run, in either forward or reverse, until it hits the whisker switch over top of the selected tank. Furthermore, a pendant is provided with your overbin controls that allow you to manually run the overbin diverter in forward or reverse.

It is important to note that if your whisker switches are not wired up correctly, do not try operating the overbin diverter, M110, in auto as the diverter will not stop over the correct bin and can cause damage to the overbin.
These three pages show the same thing graphically, but each page displays different groups of tanks. Shown in this image is the Tank 1-4 Page. From these pages you can access the setup parameters for each specific tank. To access the tank parameters simply select anywhere on the tank and it will open up the parameters for that particular tank. This screen is also where you go to turn tanks online/offline with the database. To turn the tank online/offline press on the text "KSi AutoData Online/Offline" that is directly above the tank to cycle online/offline.
The scale screen displays the scale hopper run status. The large display at the top of the scale is the actual scale weight and will match the display of the Cardinal scale indicator. The target weight for the current order is displayed below the actual readout. Finally, the status box will indicate what state the sequence is in for the current batch. Here the status of the scale is idle which means that the process is not running.

If the scale screen display does not match the scale indicator there is a problem and the system will not function properly. Check that the Ethernet cable is securely connected between the scale indicator and the Control Panel. If the error persists, power off both the scale indicator and the Control Panel. If the error is not resolved, contact KSi for further support.

The status box displays the current scale status:

1. Idle – No job is running
2. Filling – Scale is Filling
3. Discharging – Scale is Discharging or ready to discharge. Prior to opening the scale gate, the system will verify that the treater drum and/or outbound conveyors are running. These interlocks will vary depending on your specific site configuration.
Screen Menu: Treater

The treater screen shows the status and gives control of the seed treater and all the treater related devices (such as pumps and flow meters). Here you can see the four pump packs and the flow of chemicals from the pump to the atomizer. Each device on this page can be controlled in hand or in auto. From this screen each pump can be calibrated by pressing the “Calibrate” button for each pump. On this screen there is also an AutoTreat Pause button that, when pressed during a job, will pause all the treater related devices. There is also an “Aux Setup” button that allows you to setup and configure both Aux. plugs that comes with the AutoTreat package. To jog the lines press and hold on the pump graphic below the tank and the pump will run until you release the pump.
**Screen Menu: Load Out**

The Load Out page is where you control your load out conveyors and will vary slightly depending on your site configuration. The conveyors on this screen can be controlled manually by opening up the device’s HOA controls or can be started and stopped in auto. In the image above, Auto Load Out is enabled, which means that the treater fill and treater load out conveyors will not start until the Conveyor Control “Start” button is pressed in the bottom right hand corner. If Auto Load Out is on (this is a selection when setting up an order) then these conveyors will start and stop automatically based on delay timers that are set up from the scale settings page.

The treater fill conveyor and the scale gate is interlocked with the treater drum and the high level sensor on the treater. The system is designed to not let any gate or conveyor transfer seed to the next piece of equipment until that piece of equipment is ready. In the case of the seed treater, the scale gate and the treater fill conveyor will not turn on until the treater drum is running or if the high level sensor in the treater hopper does not sense seed.
Support Menu
There are 2 sub menus under the “SUPPORT MENU” button:

Support Menu: Quick Guides

This screen gives you access to 9 different quick reference guides to help you operate your system. Each button brings up a page with instructions on how to do the specific task.
Support Menu: Contact KSi Automation

This screen simply shows information related to your System Version as well as the contact information, including the after hours support number, for KSi Conveyors.
**KSi Menu**

There are 2 sub menus under the “KSI MENU” button:

![KSi Menu](image)

**KSi Menu: System Setup**

![KSi Menu: System Setup](image)

This screen gives the user the ability to enable and disable different features within the automation as well as setting the date and time. From this page a few global settings, such as unit size, are set.
Below is a description of the different buttons/parameters that can be set/defined from this System Setup Page.

- **Logic Reset** – Pressing this button resets the job running part of the system to the default stage and should be used only when advised by a KSi Automation Technician. If this button is pressed in the middle of a running job the job will shut down and a ticket will not be able to be printed for the job.

- **Enable Data Log to USB** – This button will turn green when this button is enabled (like the image shows). When this is enabled the system will record every transaction record to a USB Drive that is plugged into the PLC. A USB Drive needs to be plugged in or else the job will not be recorded even when this option is enabled.

- **Enable Tank Fans** – This will be enabled by a KSi Technician if tank fans are a part of your automation package.

- **Enable Auto Discharge** – When this is enabled the treater fill and treater load out conveyors will turn on and off automatically based on timers in the scale setup. Enabling/Disabling this is also a function of a specific job and so this button will enable/disable automatically depending on how you set up your job.

- **Amount = lbs / lbs**
  - Min Order Amount in LBS – In this field you select the minimum order size in lbs.

- **Amount = unit / lbs**
  - Min Order Amount in Units – In this field you set the minimum order size in units.
  - Unit Size / lbs – In this field you select your unit size / lbs

- **Amount = Unit / Cnt**
  - Min Order Amount in Units – In this field you will set the minimum order size in cnt/unit
  - Unit Size / Seeds – In this field you will define how many seeds there are per unit.

- **Custom Rate Pump PID Control Parameters** – These three fields should only be adjusted by a KSi Technician or when a KSi Technician asks you to adjust them. These numbers will directly affect the accuracy of your treating system if adjusted incorrectly.
**KSi Menu: Alarm Log**

You may be asked to access this Alarm Log screen by a KSi Technician. This keeps a running list of all the alarms your system has. This list should not be cleared unless you are asked to by a KSi Technician.
**System Pause**

The “SYSTEM PAUSE” button pauses the entire system including, closing all the air gates, turning off all conveyors and all the treating equipment.

The System Pause button will appear in the menu bar of all main screens as well as the lower left hand corner of the System Overview Page and as a button on the system control menu from the Home screen. This button should be accessible from anywhere on your touch screen and is the best option to pause your entire system when need to stop everything for whatever reason. The E-Stop button on the front of the panel is designed to be used in an emergency as it shuts everything down and leaves all the gates open whereas this System Pause button is designed to shut down all the conveyors, treater devices and close all the air gates. Once paused the system can be un-paused by pressing this button (that will be flashing red and yellow) and the system will start back up again resuming the job.
**System Status**

The “SYSTEM STATUS” Button takes you to an overview page where you can see all the equipment that is operating and you can pause sections of the equipment at a time.

In the image above you can see that the gate on Tank 1 is open and the conveyors between tank 1 and the scale are running as seed is being transferred to the scale. The status bar on the scale tells you that the scale is filling by weight. From this screen you can pause the Tank Gates (closes all the tank gates), pause the treater (pauses all the treater devices) or press system pause which pauses everything. You can also navigate to any device page by pressing on the device you would like to navigate to. Example, if you press on the scale, you will be taken to the scale page.
4 – Order Setup

Description of Setting up an Order or loading an order from the KSi AutoData database.

The control system is designed to allow an order to be either loaded from the KSi AutoData database or created from the touch screen on the control system. An order can also be loaded up from the database and then edited and saved from the touch screen controls. The system will then batch the correct amount of seed and apply the correct amount of treatment as entered on the order. At the end of the job a ticket will be printed giving the operation and/or customer a printed copy of the transaction that took place. That same transaction is also recorded to the database. Once a ticket has been printed from the ticket printer, a full size (8 ½ X 11) order receipt can be printed from the touch screen to a printer that is installed on the server computer.
Load Pick Up Order from KSi AutoData

Orders can be completely setup from the database web app, KSi AutoData, so that orders can simply be searched for by either the order number or the order name. When an order is entered in KSi AutoData and then searched for from the touch screen the entire order, customer, and treatment information is pulled over from the database and the job is ready to start.

The above image shows the Home screen without an order being loaded or entered.

Following are the steps to load an order from KSi AutoData

1. From the AutoData web app find the Pick Up order number and/or Pick Up order name. (for more details on finding the order number/name see the KSi AutoData section)

   o Alternatively, from the touch screen you can print a Pick Up Order list to the printer installed on your server computer (see Chapter 9 for more details on setting up a printer).
To print a Pick Up Order list click on “System Print” from the touch screen.

The image on the right shows this print request window. From this window you will select a range of pick up order numbers to print. Press on the minimum number (A) and then type in the minimum Pick Up Order number. Then press the maximum number (B) and type in the maximum order number that you want to print. Once you have entered in your range press the “Pickup Order List Report” button (C). This will print the report to your printer that is installed on your server computer. This report will then show you all your pick up orders that fall within your range that you selected between (A) and (B).

2. At the control panel touch screen, go to the Home Screen and either enter the Pick Up order number in the “Order by Number:” field (A) or enter the Pick Up order name in the “Order by Name:” field (B). With one or both of those entered press the “Search” button (C) on the top left hand corner of the page. If the order you searched for exists in the database, all the order information on the Home page will be populated.
3. In the example below an order name of “NEW ORDER” was entered in the Order by Name Field and the Search button was pressed. This order was found in the Database and all the order information on the Home Page was automatically populated from Pick Up Order that was entered in the Database.

4. Once the order is loaded in from the Database the job is ready to start by pressing Master Start.
Create New / Edit Order from Touch Screen

An alternative to loading a Pick Up order in from the Database is to set the order up from the Touch Screen. Setting up an order from the touch screen is a three step process: 1) Order Setup; 2) Customer Setup; 3) Recipe Setup. Once the order is entered or edited press the “Save” or the “Save As” button in the top right hand corner of the screen to save the order back to the database.
1) **Manage Order**

The manage order screen is where you set up specific order information, such as an Order Name, Tank #, seed amount, treating rate. To access the order management page from your home screen press the “Manage Order” button (1).

![Manage Order Screen](image)

This opens a pop up window that allows you to enter order related information.

- **(A)** Order – Enter a name for the new order (this order name must be unique)
- **(B)** Comment – Enter any comment into this field that you want printed on the ticket and on the transaction record in the database
- **(C)** Seed Variety and Seed Lot (these two fields are a light green color to show that these are read only fields. These fields are auto populated when the tank # is entered in (D)).
- **(D)** Tank – Enter the tank number (1-12) in this field and the Seed Variety and Seed Lot are automatically populated
- **(E)** Seed Amount – Enter the amount of seed for the order. This field is correlated with buttons Amount lbs/lbs (L) / Amount unit/lbs (M) / Amount unit/ctn (N). Whichever of those buttons is selected is how the order should be entered in this seed amount field.
**SEQUENCE OF OPERATIONS**

- **(F)** Rate – Enter the treating rate for the order. The seedwheel or VariRate gate will deliver seed through the treater at this rate.

- **(G)** Temp – Enter the temperature (in Fahrenheit) in this field if you want the temperature to be stored with the transaction.

- **(H)** Wind – The wind speed can also be entered and stored with the transaction in the database.

The following buttons toggle On (Green) / Off (Red)

- **(I)** Auto Treat – This should be enabled if you have an AutoTreat system and are planning on running your seed through the treater. If you have an AutoBatch only system or are bypassing the treater this option should be disabled.

- **(J)** Scale Shots – This button enables or disables shot control from the scale. If this is enabled the system will pause before the scale discharges and give the operator a chance to discharge from the scale a specific shot size. If this is disabled, the scale will discharge the entire scale without prompting the operator for a shot size.

- **(K)** Auto Loadout – This button enables/disables Auto Loadout for the job. If this is enabled, the treater fill and the treater discharge conveyors will turn on and off automatically based on when the system needs them to run and delay off timers that are setup from the scale and treater settings page. If this option is disabled, the treater fill and treater discharge conveyors will not start automatically. A start/stop button appears on the load out page that gives the operator control over whether these conveyors are running or not.

- **(L)** Amount Lbs / Lbs – If this is selected the seed amount will be entered in lbs.

- **(M)** Amount Unit / Lbs – If this is selected the seed amount will be entered in units based on lbs.

- **(N)** Amount Unit / Cnt – If this is selected the seed amount will be entered in units based on seed count.

- **(O)** Once all the information is entered press the green check mark to go back to the Home page.
2) **Manage Customer**

The manage customer screen is where you go to select a customer for the job. From this screen, which is accessed by pressing the “Manage Customer” button (2) on the home screen, you will search for an existing customer by searching any of the fields except the zip code. Once the customer is found, they can either be edited and saved or selected as the customer for the job. A customer can be edited by changing any of the information and then clicking the “Save” Button. From this screen a new customer can be entered by typing in all the customer information and then pressing “Save As”. This will save the customer to the database. Once the customer is selected, press the green check mark in the bottom right hand corner of the screen which will take you back to the home screen.

When the search button is pressed the database is searched for a customer that matches any of the fields except the zip code. In order to search for a customer, clear all the fields by pressing the “Clear” button in the bottom left hand corner, and then typing in the customer information you know and then pressing “Search”. If the customer is found, the customer information on this screen will be populated with that information. If the wrong customer is found, try adding an additional field to be more specific about the customer you are searching for.
3) **Manage Recipe**

The manage Recipe screen is accessed by pressing the “Manage Recipe” button (3) from the Home screen. From this screen you can search for an existing recipe by typing in the recipe name and pressing “Search”. If the recipe is found the recipe information and treatment details will be populated from the Database. A recipe can be edited by clicking on any of the fields and typing in the new value and then pressing “Save”, which will save the changes to the recipe back to the database. A new recipe can be entered by typing in a Recipe Name and defining the Treatment Item rates and then pressing “Save As”, which will save the new recipe to the database to be used later. Once the correct recipe is shown, press the green check in the bottom right corner of the page to go back to the home screen.

On the page you will notice that rates can be entered either in oz/100 weight or by Al/Seed. If Al/Seed is entered then an Al/oz needs to be entered as well.

From this page the aux. devices can be enabled/disabled depending on the recipe. The setup for each Auxiliary device can be accessed from Treater page.
**Save the Order**

If any of the order, customer or recipe information is edited, the order needs to be saved back to the database before the job can be started. In the example below, the order, customer and recipe have been edited. Once any of those are edited, a red dot will appear beside the changed section. These red dots are informing you that the order needs to be saved back to the database before the job can be run.

On the bottom of the screen in the system status message bar a message is showing saying that the order has been changed and the order needs to be saved with either a Save or a Save As before the job can be started. You will also notice that when any of the dots are red the Master Start button locks out and the job cannot be started.

To save the order, either press “Save” to edit the existing order or “Save As” to save the order as a new Pick Up order. In order to use “Save As” the Pick Up Order Name needs to be unique.
Once the order is saved the dots besides the three sections will turn green and the master start button will unlock allowing the order to be started.
**Running an Order Offline**

The KSi Automation system is designed to seamlessly integrate between the touch screen and the database. However, if the database connection ever goes down (because the network connection is lost or the server computer powers off), the system can still be ran. When the network is lost the automation system recognizes this and automatically kicks the system into offline mode.

In the above image, the network connection with the database has been lost and the system has switched over to offline mode. When the system is offline, everything can be run as normal but orders, customers and recipes cannot be loaded up from the database. Also, if a job is ran when the system is offline, the transaction will not automatically be recorded back to the database so any orders ran while the system is offline need to be entered into KSi AutoData manually.
Chapter 5

5 – Tank Setup

Description of Bulk Seed Transfer System Tank Setup from Touch Screen.

The recommended methods for setting tank parameters and control are defined as follows. This chapter will step you through required actions to complete a tank setup and calibration operation. The parameters for each tank are synced with the database and can be entered or edited in either place. This chapter describes the process of setting up your tanks from the touch screen. For details on how to setup your tanks from KSi AutoData see Chapter 9.
Accessing Tank Setup Parameters from Touch Screen

(1) Go to the appropriate tank screen such as “TANK 1-4” and press anywhere on the tank graphic that you wish to setup and calibrate. Each tank must be setup and calibrated before you run an order from that specific tank. The tank should be setup and recalibrated when it is refilled.

(2) There is a security level designed into the system to help limit calibration changes to only operators who understand and operate the system on a regular basis. The default security code is “777”. Enter the code and press enter.
Overview of Tank Setup Parameters

Once you enter the security code and press Enter a Setup Parameter window will pop up for that specific tank. The first six values (A-F) are setup parameters that you need to enter. The next three fields (G-I) are parameters that are automatically set when an Auto Set (L) is ran. Note that these values can all be entered and edited from KSi AutoData as well as from this Setup Parameters window on the touch screen.

(A) Seed Variety – Enter the seed variety for the specific seed that has been put in this tank.

(B) Seed Lot ID – Enter the seed lot # in this field for the seed that is in this tank.

(C) Seeds per lb – Enter seeds per lb as provided from the seed company’s delivery ticket. When a seed amount is entered using seed count units this number is required so the system can calculate the number of lbs required to fill an order of X Units.

(D) Fill Amount (lbs) – Enter the amount of seed that has been put into the selected tank. Any time seed is added to the tank this value needs to adjusted to represent the amount in the tank. As batches are automatically discharged from this tank by running orders the system automatically takes the batch amount out of this fill amount number to keep a running total of how many pounds of seed remains in the tank.

(E) Capacity (lbs) – Enter the total amount of seed that your tank can hold when the tank is completely full. This establishes for the system a reference for displaying how full a tank is on the bar chart. (Note: when your tank is completely full this number should be adjusted to match exactly what you entered for the fill amount (D), this will show the tank 100% full.)

(F) Seed wheel Cal (g) – The seed wheel cal is required before you run the AutoTreat system so that the seed wheel can accurately calculate and control the rate of seed through the seed wheel on the treater. Use the gram scale and calibration beaker provided with the seed treater. Put the beaker on the scale and Zero the scale (we only want the weight of the seed included in this number, not the container also) then fill level full with a sample of seed from the tank (do not pack or force seed into the beaker). It is best to get this weight while you are filling your tanks.
and it is at that point when you have the best access to the seed. It is good practice to take a sample of seed from each semi and then average them together to get the best value for this field. This value should be somewhere around 1000 grams (+/- 100). If this value is 0 or too far off of 1000, the system will pause at the treater and not let the seed wheel run until this value is acceptable.

**(G)** Preact (lbs) – The tank # Preact value is established when an Auto Set (L) is ran. This value is the weight of seed on the conveyors between the tank gate and the scale while the scale is filling. This value lets the system know how much seed to anticipate in the system between the tank discharge gate and the scale. The system then knows how much sooner the tank gate must be closed so that when the system is cleaned out you land right on the requested seed amount on the order.

**(H)** Discharge Rate (lb/sec) – This value is also established when an AutoSet (L) is ran. This value lets the system know the rate at which seed discharges from the tank in lbs/sec. This value is used to determine how long the tank gate should remain open when a seed amount is requested that is less than the Preact amount. We always use weight based control (Preact) when possible because it is more accurate and repeatable. However, when the requested amount is less than the Preact the system automatically detects this and will run a “Fill by Time” cycle where the gate will remain open for a specified amount of time that is determined by this value.

**(I)** Cleanout (sec) – This value is also established automatically when an AutoSet (L) is ran. This is the amount of time that the system gives the conveyors to clean out after the tank gate shuts. This will vary from tank to tank (the farther the tank is from the scale the higher this value will be). Determining this value automatically ensures that your system is running as efficiently as possible without any dead time.

**(J)** Auto Adjust (Seed Wheel Cal) – This is a toggle button that shows green when enabled and blue when disabled. When this option is enabled the system will set a seed wheel adjust factor that is specific to this specific tank and seed size. With this option enabled your seed wheel will continually adjust every time seed runs through the system to ensure accuracy for your treatment.

**(K)** Auto Adjust (Preact) – This is a toggle button that shows green when enabled and blue when disabled. When this option is enabled the system will compare the actual scale weight with the target weight at the end of each batch and make an adjustment to the Preact value by 75% of the difference. It is recommended that this option stay enabled as this helps automatically adjust for any changes in seed flow influences as the tank is getting emptier.

**(L)** Run Auto Set – When this is pressed and a security code is entered, the system will bring seed into the scale from this tank in two batches and automatically calibrate the numbers for the Preact (G), Discharge Rate (H) and the Cleanout (I). At the end of the Auto Set you will end up with 2500 lbs of seed in the scale which can be discharged by entering an order for 2500 lbs or for more if more seed is desired to fulfill an order from this tank. (The scale needs to be empty and read Zero before running an Auto Set). Refer to the following section for more detail on running an Auto Set.

**(M)** Exit – Press this button to exit this screen. When exit is pressed the values entered in this window are copied into the database and can then be viewed from the KSi AutoData web app.
CALIBRATING TANKS

Accessing “Run Auto Set”

(1) From the tank setup parameters window press “Run Auto Set”. This will automatically calibrate the tank you have open and you will end up with 2500 lbs in the scale. **You must only start this if the scale is empty.** After “Run Auto Set” is complete, capture your seed sample for the seed wheel cal (if this has not already been done) then run an order to use the seed in the scale and run it out automatically. You will choose to run an order asking for 2500lbs to fill a box or run an order asking for more seed to fill a tender. If you ask for more than 2500lbs the system will add to the amount on the scale to meet the new target.

(2) There is a security restriction designed into the system to help limit accidentally running this feature when it wasn’t intended. The default security code is “777”. Enter the code and press enter.
Overview of “Run Auto Set” Sequence

1) Auto Set will start by displaying the “Auto Set Monitor”.

(A) Auto Set Running – Auto Set has begun. The underbin and scale fill conveyor have turned and the tank gate has opened.

(B) The 1st run targets 500 lbs in the scale with a Preact set to Zero. Once the scale has reached 500 lbs the tank gate will close.

(C) This window shows the actual weight in the scale.
2) Once the scale reaches 500 lbs the tank gate will close and the conveyors will cleanout for 60 seconds.

(A) This shows a running timer that starts once the tank gate closes. This timer will count to 60 sec before beginning the second auto set batch.

(B) When the scale hit 500 lbs the tank gate closed but the conveyors will continue running to clean out.

(C) This field shows the First Run Gate Time. In this example it took the 34.7 seconds to reach 500 lbs on the scale. This value is used to determine the lbs/sec rate.
3) The conveyors filling the scale will continue to cleanout for 60 seconds. At the end of 60 seconds, the amount in the scale over 500 lbs is the 1st run preact amount.

(A) In this example, the scale actual ended up landing on 750 lbs which means the first run preact will be 250 lbs.
4) At the end of the 60 seconds the system will reopen the tank gate and target filling the scale to 2500 lbs.

(A) For the 2\textsuperscript{nd} run the target scale amount changes to 2500 lbs.
(B) At the end of the 1\textsuperscript{st} run the system determines the value for these 4 fields. With the 1\textsuperscript{st} run coming in at 750 lbs the 1\textsuperscript{st} Preact equals 250 lbs (750-500). Now, the gate on the tank will close 250 lbs before the target amount for the batch. For the 2\textsuperscript{nd} run of the Auto Set, with the scale targeting 2500 lbs the tank gate will close when the scale reaches 2250 lbs.
5) At the end of the 60 seconds the system will reopen the tank gate and target filling the scale to 2500 lbs.

(A) Once the scale reached 2250 lbs (B), the tank gate closed and the 60 second cleanout begins. This value shows the timer counting up to 60 seconds.

(B) This field shows the scale actual amount, which is reading 2250 lbs.

(C) With a preact of 250 lbs, when the scale weight reached 2250 lbs (B), the tank gate closes. The scale fill conveyors will continue to run for the 60 second cleanout.
6) Once the conveyors are cleaned out after the second Auto Set batch, the scale will read 2500 lbs (A). The conveyors will continue to clean out until the timer has reached 60 seconds.
7) Auto Set Complete

At the end of the 60 second clean out time after the second run, the Auto Set Monitor will say “Auto Set Complete”. At this time the scale fill conveyors will also turn off and the values for the Preact, Rate and Clean Out Time are automatically set in the Auto Set Monitor box. When the Exit button on the Auto Set Monitor is pressed these values are copied into the Tank Setup Parameters window. Your tank is now calibrated and you are ready to run an order from this tank.
8) When the Auto Set is complete and you have exited out of the tank setup parameters window you are ready to run an order to discharge the 2500 lbs that is in the scale.

In the image above, the scale shows that it has 2500 lbs in the scale. After an Auto Set is ran, these 2500 lbs will stay in the scale until an order is setup and ran discharging this seed. It is important to set up an order where the seed requested is from the same tank that the Auto Set was done from. An order can be set up for 2500 lbs, which in that case, the system will see that the scale has reached weight and is ready to discharge, or you can set up an order for something more than 2500 lbs and the system will bring in additional seed to meet your requested seed amount on the order.

Example:
If, after an Auto Set is ran, you create an order for 5000 lbs, the system will bring in another 2500 lbs into the scale and you will end up with 5000 lbs. Doing this allows you to run your Auto Set at any point throughout the season without having to do something with only 2500 lbs of seed when you really want something more than that amount.
Database Sync (Tank Parameters)

When the server computer is connected to the database and each tank is online, the tank parameters sync between the database and the touch screen. If a change is made on the touch screen, those parameters are sent to the database when the “Exit” button is pressed from the Tank Setup parameters window. If a change is made in the database through the KSi AutoData web app, those changes are copied over to the tank setup on the touch screen.

**Tanks Online/Offline Status**

In the image above you can see that Tank 1 is online and Tank 2 is offline (there are red boxes around the KSi AutoData Status messages on tanks 1 and 2). When the tank is online the cloud above the tank is a light green and when the tank is offline the cloud above the tank is a light red. You will also notice that when a tank is offline an additional graphic appears above the KSi AutoData status message. This image represents which way the data will transfer between the tank and the database when the tank goes back online (this is covered in more detail in the “Setting Tanks to Online” section).
Setting Tanks to Offline

To turn a tank from online to offline simply touch directly above the tank on the text that says “KSi AutoData ONLINE”. In the image below the left image shows where to press to turn a tank from Online to Offline. When this is pressed the cloud above the tank will turn red to indicate that the tank is offline.

When a tank is offline the tank parameters will not sync between the database and the tank. See the following section for more details on how to sync the tank and the database after the tank has been offline.
**Setting Tanks to Online**

To turn a tank from offline to online simply touch directly above the tank on the text that says “KSi AutoData OFFLINE”. However, before you turn a tank from offline to online you will want to pay attention to the graphic that is directly above the KSi AutoData status cloud.

The image on the right shows a close up of the graphic that will show up when a tank is offline. Following are descriptions of the different images within this graphic:

(A) This image represents the touch screen on your KSi Control System. This would be the data that is stored in your tank setup parameter window.

(B) This image represents a database. This would be the data that is stored in your database on your server computer.

(C) The arrow tells you which way the data will transfer when you turn your tank online. In this example, if the tank is turned online the data will transfer the data from the database to the tank, overwriting the data that is stored on the touch screen in your tank setup parameter window. If the arrow was going the other direction the data would be copied from the touch screen to the database, overwriting the data in the database.

When your panel is first powered on the arrow will default to transfer from the database to the touch screen (like the image shows). Once the tank is turned online for the first time the arrow will default to transfer from the touch screen to the database. The assumption was made that when power to your panel is off the data on the touch screen tank parameter window will not be changing so you will want to copy data from the database to the touch screen. Then, after the initial transfer, changes will be taking place on your touch screen instead of the database and so the default transfer direction will be from the touch screen to the database (opposite of what this image shows).

While the arrow will default to the direction that we have predicted is the most likely scenario, it is possible that when you turn a tank offline and back online, you may want to change directions of which way the data transfers from. When a tank is offline you can always change the direction by touching the arrow in the graphic. Everytime the arrow is pressed, it will change direction allowing you to choose which way you want the data to transfer.

While it is important to transfer data the correct direction when turning a tank online, this will not be needed during typical operation as the tank will always be online.
**Tank Online Status**

When your tank is online, there is a small indicator in the top left corner of the KSi AutoData status cloud that indicates if the connection is good (green) or disconnected (red). The image above on the left shows a green light which means the connection is good and the data is syncing successfully between the touch screen and the database. The image above on the right shows a green light which means that this tank has lost connection with the database.

When the tank loses connection there will also be a message bar that shows up across the bottom of the screen (this will appear on all the screens regardless of what page you are on) alerting you that the KSi AutoData Link has failed for the specific tank. The image above shows the message flashing across the bottom of the screen as connection was lost for Tank 1. The alarm light on the top of the panel will also flash on and off letting you know there is a problem.

If connection is lost to any of the tanks it is a good idea to immediately look into why the connection was lost. The most common reasons would be that the server computer was shut down or the Ethernet cable between the server computer and the panel were disconnected. Once the issue is resolved the status light will automatically turn green again and the message bar along the bottom of the screen will go away.

If the problem cannot be resolved it is good practice to go the specific tank and turn the tank offline until the issue can be resolved. Once the tank is turned off, the alarms will go away and the alarm light will quit flashing. Once the problem is resolved you can go back to the tank and turn it back online after verifying that you are transferring data in the correct direction (from the touch screen to the database or vice versa) depending on which place has the newest data.
6 – IPAC Setup

Description of Bulk Seed Treatment System Pump Pac Setup

The recommended methods for setting pump pac calibration and control are defined as follows. This chapter will step you through required actions to complete a pump pac setup and calibration operation.

Setting Up Your Pump Pac

A: Make sure that this valve is set to direct treatment to the mix tank before any calibration or tuning is attempted. Also make sure that the following items have been completed:

1. Pump Pac has been plumbed per manufacturer’s instructions.
2. Choose the appropriate pump tube size based on pump type and flow requirements.
3. Load Treatment into your pump pac. If you are using water for testing purposes you must not use pure distilled water, as the flow meter will not work with a non conductive fluid.
4. Run the pump in “HAND” for a few minutes after loading Treatment to get all air out of the lines and filter.

**Accessing IPAC Setup Parameters**

To access the IPAC Setup Parameters go the Treater Page and then press anywhere on the treatment PAC that you want to setup. In the example below we show pressing on treatment PAC 1 (A) which opens up a window for the setup parameters for this specific IPAC (B).
Overview of IPAC Setup Parameters

(A) IPAC 1 Treatment – Enter the treatment name or treatment description for this IPAC into this field. This will show up as the treatment item on the Recipe.

(B) Select Control Parameter Set – There are 3 selections to choose from:

(B.1) High Rate – Select this option if the pump is a high rate pump.

(B.2) Low Rate – Select this option if the pump is a low rate pump.

(B.3) Custom Rate – This option selects the custom PID settings as defined in the KSi Menu → System Setup Page. Only select this option if instructed to by a KSi technician.

(C) % Under – This value pertains to the calibration of the flow meter. When calibrating the flow meter you will enter an actual value of liquid in the chamber and it will compare that number to the calculated value that the flow meter determined ran into the chamber. In this example, if the actual value vs. the value the flow meter calculated it ran is under by more than 15% the system will reject that entry.

(D) % Over – This is the same as (C) except that it allows the calibration number to be over by up to 15% before it rejects the entry.

(E) % Over Limit – This is the percent over the target application rate that the system will allow the treatment to be before faulting the pump.

(F) For Time – This is how many seconds the system will let the treatment application be out of the tolerance set in (E) before it faults out the pump and pauses the system.

(G) % Under Limit – This is the percent under the target application rate that the system will allow the treatment to be before faulting the pump.

(H) For Time – This is how many seconds the system will let the treatment application be out of the tolerance set in (G) before it faults out the pump and pauses the system.

(I) Hour Usage Meter – Alert At – This value allows you to set a maintenance schedule so that the system will alert you after the pump has operated for so many hours.

(J) Actual – This is how many hours the pump has ran since the last time it was reset (K).

(K) Reset – Pressing this button resets the actual hour meter.
FLOW METER CALIBRATION

Accessing the IPAC Calibration Window

Once your Treatment Pac is setup you are ready to calibrate your flow meter.

To access the calibration screen go to the treater page and then press on the “Calibrate” button of the specific IPAC that you want to calibrate. In the example below, we show pressing Calibrate for IPAC 1 which opens up the IPAC 1 calibration window.
Overview of Calibration Window

**Overview of Calibration Window**

- **(A) Jog** – Pressing and holding this button will jog the pump at the speed that is selected by the slider bar to the left of this button.

- **(B) Pump Speed** – This is the % of max speed the pump will run for the calibration cycle. This needs to be slow enough so that the liquid will not overflow the cal tube when running for the length of time set in (C).

- **(C) Run for Time** – This is how many seconds that the pump will run for the calibration cycle. The longer the number the more accurate the calibration will be. 90 sec. is the minimum value that can be entered but it is recommended by KSi that this value be set for at least 120 seconds and preferably 180 seconds.

- **(D) Start Cal Cycle** – Pressing this button will begin the cal cycle, running the pump at the speed in (B) and for the number of seconds in (C).

- **(E) Total in Cal Tube** – When the calibration cycle is complete you will enter the actual number of oz. that are in the cal tube here.

- **(F) Total Calculated** – This is a read only field where the system puts the number of oz. that the flow meter has calculated.

- **(G) Calculate** – At the end of the calibration cycle and once you have entered a value in (E), press this calculate button.

- **(H) Cal Factor** – Once the calculate button is pressed, the system will determine a cal factor by looking at what the flow meter calculated (F) vs. what was actually ran (E). Any time a cal cycle is started this value will be reset to 1.

- **(I) Close** – Press close to exit and save the cal factor that has been figured.
Running a Calibration Cycle

Calibrating the flow meter is a critical part of your KSi AutoTreat system and is it is crucial that this is done at least once a day in order for your system to be as accurate as possible. The following steps should be done at least once a day for every IPAC. This process should also be done if a mix tank is refilled or if the latch on the IP pump is loosened and reset as this could alter the way the liquid flows through the pump.

1) Before starting the cal cycle check to make sure that your valves are positioned so that the liquid will pump into the cal tube chamber.

2) Once the valves are set correctly open up your calibration window for the desired pump. Press and hold the jog button until the liquid recedes in the cal tube so that the liquid is at the “0” oz level in the tube.

3) When the liquid is at the “0” oz level set the pump speed and the run for time for the desired values to calibrate the pump. It is recommended that the Run for Time be set at 180 seconds and the pump speed slow enough so that it does not overflow the cal tube but will still fill the cal tube to at least 50 oz. (15% is a good starting point).

4) Press Start Cal Cycle and the system will begin the calibration cycle, running the pump at the desired speed for the set amount of time in step 3.

5) After the cal cycle has completed and has ran at the set pump speed for the set time, read the actual volume in the cal tube and enter that amount in the Total In Cal Tube field. This value should be somewhat close to the value that the system has calculated and put in the Total Calculated field.

6) Once the Total In Cal Tube value has been entered press “Calculate”. This will calculate a new cal factor and put this new factor in the Cal Factor Field. If the actual value is too far outside of the parameters set in the IPAC setup parameters window the system will reject this value.

7) Once a cal factor has been calculated you can close out of the calibration window and that IPAC is configured. Set the manual valve to drain back to the mix tank and set the pump pac valve to send treatment to the treater before you begin treating.
7 – Device Setup

Description on setting up control parameters for equipment in control system, including the treater, conveyors and scale.

Following is an overview and instructions for setting up different pieces of equipment within your automation system. The settings for any device on your touch screen can be accessed by selecting anywhere on the device that you want to view. The following pages describe how to do this for different devices.
Treater Drum Setup

Accessing the Treater Drum Setup

To access the setup for the treater drum navigate to the treater page and then press directly on the treater drum, as shown in the image below on the right by the red circle. When the drum is pressed a window will pop up showing the setup parameters for the treater drum.
**Treater Drum Setup Parameters Overview**

(A) Treating Cycle Stage 1 – All the fields in stage 1 refer to when the system is treating and through the stage 1 shutdown cycle.

(B) Treating Cycle Idle – This is between Stage 1, treating, and Stage 2, cleanout. This setting controls how long the drum remains stopped after the “Shutdown For”, from Stage 1, has expired and before the system switches over to Stage 2 and starts the cleanout stage. Recommended time is 1 second.

(C) Treating Cycle Stage 2 – This stage begins after the shutdown and idle time are complete. During this stage the system will clean the treater out and control how long the load out conveyor will run.

(D) Drum Auto Speed – This settings controls how fast the treater runs, either in forward or reverse, while it is running in auto.

(E) M500 Alert At – This field is for maintenance purposes. The system will alert you when the Actual Hours, (F), reaches the alert at hours, (E).

(F) M500 Actual – The system keeps a running total of the actual hours the motor for the drum runs. This can be reset by pressing (G).

(H) Exit – Pressing this will close this window and return you to the treater page.
Treater Drum Parameters: Treating Cycle Stage 1

(A) Treating Cycle Stage 1 – This button can be pressed to toggle between the drum running forward (green) and running reverse (yellow) during the stage 1 cycle. Normal direction for this stage is forward but in the case where treatment is not being applied and the seed is only running through the treater the drum could be set to run reverse.

(B) Startup – This section pertains to the startup of the treater. This begins once the low level sensor first senses seed above the seed wheel.

(B.1) Prestart for Time: – This setting determines how long the system allows for the drum to startup and run before the seed starts to flow.

(C) Treating – This section pertains to the treating cycle, which is while the seed is being treated.

(C.1) Start Monitor in: – This setting determines how long the system waits after the seed starts to flow to start watching for out of tolerance chemical flow from the IPAC based on the IPAC setup parameters. Suggested setting is 20 seconds.

(D) Shutdown – This section of settings are used to tell the system what to do when the low level above the seed wheel no longer detects seed.

(D.1) Turn Pumps off After: – This setting controls how long the pumps continue to run after the low level sensor no longer detects seed. Suggested setting is 0 seconds.

(D.2) Turn Seed wheel Off After: – This setting controls how long the seed wheel continues to run after the low level sensor no longer detects seed. Recommended setting is 2 seconds.

(D.3) Shutdown for – This setting controls how long the drum continues to run after the low level no longer detects seed. Suggested setting is 15 seconds.

(E) Device Status On (Green) / Off (Red) – The text shown here (in green and red) tell you which devices are running and which devices are not running during the specific section the text falls in, Startup (B); Treating (C); Shutdown (D).
**Treater Drum Parameters: Treating Cycle Stage 1**

(A) Treating Cycle Stage 2 – This button can be pressed to toggle between the drum running reverse (yellow) and forward (green) during the Stage 2 treating cycle. Normal direction for this stage is reverse as it allows the treater drum to clean out sooner.

(B) Cleanout – The settings under this section control the devices that are running during the treater drum cleanout stage.

(B.1) Run Cleanout for – This setting controls how long the treater drum runs in Stage 2 cleanout mode. This should be set long enough to completely empty the drum of seed.

(B.2) Run Loadout at end for – This setting controls how long the load out conveyor(s) run after the drum stops at the end of stage 2. This needs to be long enough so that the load out conveyor(s) completely clean out before turning off.

(C) Device Status On (Green) / Off (Red) – The text shown here (in green and red) tell you which devices are running and which devices are not running during the cleanout stage.
Scale Setup

Accessing the Scale Setup

To access the setup for the scale, navigate to the scale page and then press directly on the scale graphic, as shown in the image below on the right by the red circle. When the scale is pressed a window will pop up showing the scale setup parameters.
**Scale Setup Parameters Overview**

(A) Current Batch # – This number will show the current batch number. In the graphic above the number is “0” but if the system were running the 2nd batch of a particular order this number would read “2”.

(B) Charge – The text in this section tell the user current scale charge values based on the job that is currently running. “Charge” pertains to the time from when the tank gate opens until the first seed hits the scale.
   (B.1) Current Preact – This value will show the current Preact for the active batch.
   (B.2) Current Xfer Rate – This value will show the current Transfer Rate for the active batch.
   (B.3) Current Charge Time – This value will show the current charge time for the active batch.

(C) Fill – The settings and the text in this column show values related to the scale when the scale is filling.
   (C.1) Scale Batch Capacity – This is the maximum weight (lbs) that your scale will hold when full. If an order is entered that is for more than this capacity the system will automatically split the order into multiple batches.
   (C.2) Batch Must Fill In – This is the maximum amount of time that the system is allowed to take to fill the scale before a fault is triggered. If it takes longer than this amount of time to fill the scale you will need to come to the scale page and reset the “Slow Scale Fault Time” to turn the alarm off.
   (C.3) Preact Adjust Target – When auto adjust on your tanks is enabled the Preact will adjust the Preact by 75% of this value at the end of the batch. Example, if your target weight is 5000 lbs and you receive 5015 lbs this number will read 15 lbs.
   (C.4) Current Fill Time – This is how long the scale is taking to fill.
Scale Setup Parameters Overview cont...

(D) Cleanout – This section pertains to the scale fill conveyor clean out time. This refers to the amount of time it takes the conveyors to clean out once the tank gate closes.

(D.1) Current Cleanout Time – This value shows how long the cleanout time is based on which tank the system is pulling from. This clean out time is a tank setup parameter that is automatically calculated when an Auto Set is ran.

(E) Discharge – This section of settings pertains to when the scale gate is open and discharging

(E.1) Scale Empty Tolerance – This is how close to zero the scale must be after discharging for the scale hopper to be considered empty. 5 lbs is recommended.

(E.2) Scale Empty Time – This is how long the scale must be below the Scale Empty Tolerance (E.1) after the discharging the scale hopper to be considered empty. The scale is considered empty when both the scale empty tolerance (E.1) and the scale empty time (E.2) are satisfied.

(E.3) Turn Dis. Conveyor Off After – After the treater drum stops, the scale discharge conveyor runs for this amount of time before it turns off when Auto Load Out is Enabled.

(E.4) Current Dis Time – This is the amount of time to discharge based on your treating rate.

(F) Device Status On (Green) / Off (Red) – The text shown here (in green and red) tell you which devices are running and which devices are not running during the specific section the text falls in, Charge (B); Fill (C); Cleanout (D); Discharge (E).

(G) Order “Complete” Tolerance – The order amount left must be equal to or less than this amount for the system to determine that an order is complete. Typical order accuracy is within 5 lbs but the order is allowed to complete if it is within this amount.

(H) Calculated Scale Cycle Time – This is the total amount of time it took the system to fill and discharge one batch. Comparing this value to the batch weight will allow you to determine system throughput capacity.
**Conveyor Setup**

**Accessing Conveyor Setup Parameters**

To access the setup for a conveyor, navigate to the page that shows the conveyor that you are wanting to setup and then press anywhere on the conveyor to open up the setup window for that conveyor. In the image to the left we have pressed on the M101 (scale fill) conveyor and the setup window for this conveyor opened up.

**Conveyor Setup Parameters Overview**

(A) Conveyor Start Delay Time – This conveyor will delay starting for this amount of time (seconds) when it is automatically started by the system. If no delay is desired, set to zero.

(B) Conveyor Stop Delay Time – This conveyor will delay stopping for this amount of time (seconds) when it is running in automatic mode and it is automatically stopped by the system. If no delay is desired, set to zero.

(C) Global Motor Fault Time – This is a global parameter and any change to this field will be applied to all other motor setups in your system. This is the amount of time that the system waits after it starts a motor to receive confirmation that it is actually running before displaying a fault for the motor.

(D, E, F) These are maintenance fields that are used to remind the operator of maintenance schedules. In the alert at field (D) set how many hours you want the motor to run before you are alerted.
Scale Gate Setup

Accessing Scale Device Parameters

To access the setup for an air device, navigate to the page that shows the air device that you are wanting to setup and then press anywhere on the air device to open up the setup window for that device. In the image to the left we have pressed on the gate graphic for KG290 which opened the setup parameters for KG290.

Air Device Setup Parameters Overview

(A) Air Pressure Fault Time – This is a global parameter and any change to this field will also be applied to all other air devices in your system. This is the amount of time that the air pressure can drop below the pressure switch setting (adjusted from the air manifold and is usually set to around 60 psi) before faulting and closing all air devices.

(B, C, D) These are maintenance fields that are used to remind the operator of maintenance schedules. In the alert at field (B) set how many cycles you want the air device to cycle before you are alerted.
Treater Inlet Hopper Setup

Accessing Treater Inlet Hopper Setup Parameters

To access the setup for the treater inlet hopper, navigate to the treater page and then press directly on the treater inlet hopper. This will open a window for the setup parameters for this hopper. In the image below we show the inlet hopper being pressed which opens up the setup window for the inlet hopper.

Treater Inlet Hopper Setup Parameters Overview

(A) High Level Off Delay – This setting relates to the conveyor feeding the treater. When the high level is reached the treater inlet conveyor will shut off immediately. When seed moves away from the high level sensor the conveyor will remain off for this amount of time before starting up again. For a 5 or 6 unit inlet hopper a 2 second delay time is recommended but anything larger than 5 or 6 units this delay off time could be longer than 2 seconds.
Seed Wheel Setup

Accessing Seed Wheel Setup Parameters

To access the setup for the seed wheel, navigate to the treater page and then press directly on the seed wheel graphic. This will open a window for the setup parameters for the seed wheel. In the image to the left we show the seed wheel being pressed which opens up a window that shows the setup parameters for the seed wheel.

Seed Wheel Setup Parameters Overview

(A) Global Motor Fault Time – This is a global parameter and any change to this field will be applied to all other motor setups in your system. This is the amount of time that the system waits after it starts a motor to receive confirmation that it is actually running before displaying a fault for the motor.

(B, C, D) These are maintenance fields that are used to remind the operator of maintenance schedules. In the alert at field (B) set how many hours you want the motor to run before you are alerted.

(E) Global Cal Factor – This calibration factor is applied to all seed wheel calculations and may be used to adjust for “whole system” variances.

(F) Adjust Enabled Tank – If “Auto Adjust” is enabled for “Tank Seed wh Cal (g) (see tank setup), then the system will compare the seed wheel quantity to the scale quantity at the end of each order. The tank specific seed wheel cal will be adjusted by this percent of error.
Atomizer Setup

Accessing Atomizer Setup Parameters

To access the setup for the atomizer, navigate to the treater page and then press directly on the atomizer graphic on the treater. This will open a window for the setup parameters for the atomizer. In the image below we show the atomizer being pressed which opens up the atomizer setup window.

Atomizer Setup Parameters Overview

(A) Global Motor Fault Time – This is a global parameter and any change to this field will be applied to all other motor setups in your system. This is the amount of time that the system waits after it starts a motor to receive confirmation that it is actually running before displaying a fault for the motor.

(B, C, D) These are maintenance fields that are used to remind the operator of maintenance schedules. In the alert at field (B) set how many hours you want the motor to run before you are alerted.
8 – Running Orders

Description of Running an Order from Your KSi Automation System.

These are the recommended methods for running orders from various seed sources and discharging seed. This chapter will also step you through discharging all or a portion of an order using the shot control. This chapter assumes that an order has been either entered or loaded into the touch screen and is ready to start. For more details on setting up an order see Chapter 4.
Running an AutoBatch Order

The following section explains how to run an order when AutoTreat is disabled (red) from the Order Management section. When AutoTreat is disabled, the treater will not be controlled.

The image below shows an order has been loaded from the touch screen and is ready to start as shown by the green “Master Start” button in the system control bar.

Once an order is loaded up and the Master Start button is green, you are ready to start the job. Following is a walkthrough of running a typical AutoBatch job.
Starting Job

(1) From the home screen, press the “Global Auto” button. This sets all the devices, including air gates, motors and pumps, to Auto so that the system can control the device.

(2) Press the “Master Start” button.

(3) Once Master Start has been pressed, the system will wait until the tank enable button has been pressed. In the image above, notice the text in the system status bar stating that the system is “waiting for operator to enable tank”. This tank enable button will show the appropriate Tank # based on the tank that was selected from the order management. Once the Tank Enable button has been pressed, the scale fill conveyors will turn on and the tank gate will open to begin filling the scale, as shown in the image below.

(4) Once you have enabled the tank, you will notice the text in the system status menu telling you that the system is filling by weight. At this point, navigate to the system status page by pressing the System Status button (4). This will take you to an overall system status page so that you can see everything that is happening in the system where you also have the ability to pause the entire system or different parts of the system.
Scale Filling

The above image shows the system status page with the scale filling by weight. From this page, you can see which tank the system is running from by which gate has turned green. In this example, the gate on Tank 1 is open (A). The scale fill conveyors are represented by the bar shown under the tanks (B). In the example above, this bar is green, which shows that the scale fill conveyors are running and the scale is filling.

On the scale, you can read the actual reading of the scale, 2505 lbs, as well as the scale target amount, 7500 lbs, and which batch of the current job is being run.

The system will fill the scale to the desired rate and then begin discharging.
Scale Discharging

When the system begins to discharge, you will see that the scale will read “Discharging All”. At this point, if Auto Load Out is enabled, the treater inlet and outlet conveyors will turn on automatically and once those conveyors turn on the scale gate will open. On the system status page the scale gate will show open by turning green (A) and the load out conveyors will show running by the discharge line turning green (B).

If Auto Load Out is not enabled, then the system will not automatically turn on the load out conveyors as the system will wait until you navigate to the load out page and press Discharge Control On. At that point, once the conveyors are turned on, the scale gate will open.

Once the scale reaches zero lbs, if Auto Load Out is enabled, the discharge conveyors will turn off after a specified amount of time as setup in the scale setup and treater setup. If Auto Load Out is disabled, then the operator is responsible for turning these conveyors off from the Load Out Page.
**Print Ticket to Slip Ticket Printer**

Once the scale has been emptied the system is ready for you to print a ticket. From the Home Screen, you will see in the status bar that the system is telling you to “Please Print Ticket Now”. You do not have to wait until the load out conveyors are cleaned out to return to the home page and print your ticket. As soon as the scale is empty, a ticket can be printed and the next job started.

To print a ticket, press the Master Print button (A) which will print a ticket to your slip ticket printer which is plugged into the grace port on the left side of your panel. Once the ticket has printed, a pop up will appear asking if the ticket printed okay. If the ticket did not print correctly, press “NO” and then press “Master Print” again, which will print another ticket (this can also be used to print a 2nd copy of the ticket). Once the ticket has printed correctly, press “YES”. Once “YES” has been pressed at this window, you cannot print another ticket to the slip ticket printer.
Print Receipt or Tech Report on 8 ½ X 11 Paper

Once a ticket has been printed to the slip ticket printer, you will notice that the system will lock the system from running the same job again. Each Pick Up Order is designed to be ran once which allows each pick up order to have only one transaction in the database. This is shown by the red X on the right side of the screen and the text “ORDER COMPLETE”.

The other thing that you will notice is that where the Master Print button was, there is now a System Print button. The system print button allows you to print a receipt or a Tech Report to a standard printer that has been installed on your server computer (see the KSi AutoData section for more details on setting up a printer).

To print an Order Receipt or a Tech Report page press the System Print button (A). This will pop up a window where you can either select to print an “Order Receipt” or a “Tech Report”. Pressing exit closes this window.

An order receipt or a tech report can always be printed at a later date by searching, from the touch screen, for a completed order name or number and then pressing “System Print”.

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KSi AUTOMATION AUTOTREAT V3.2 SYSTEM
USER’S MANUAL
Running an AutoTreat Order

The following section explains how to run an order when AutoTreat is enabled (green) from the Order Management section. When AutoTreat is enabled, the treater and pumps are controlled by the KSi Automation system.

The previous section explaining how to run an AutoBatch order needs to be reviewed before continuing into this section. Everything that was shown in the previous section will be the same for running an AutoTreat order, but this section shows the additional control of the treater and pumps.

Starting the job and filling the scale is the same process, but when the scale begins to discharge, the treater fill devices will startup before the scale will begin to discharge.

Following is the sequence of events beginning at the scale discharge phase.

**Scale Discharging / Treater Startup**

When the discharging sequence begins the system will turn on the Treater fill conveyor (assuming Auto Load Out is Enabled) and open the scale gate. This will move seed to the inlet of the treater. Once the high level sensor in the treater inlet hopper is reached, the scale gate will close and the treater fill conveyor will turn off. At this point, the system will recognize that there is seed above the seed wheel and will prompt the operator to ensure that the treater is ready to begin treating.

In the image to the right you can see the message appears on the system status page. This message also will appear on the treater page and the home page.

When you have confirmed that the pumps and treatment is ready, a seed rate has been entered, and the correct recipe is selected, then press the Continue button.
**Treating**

Once Continue is pressed, the treater drum will turn on and the pumps, seedwheel and atomizer will follow.

In the image above, you see which devices are running by the green indicators. In this example, the scale gate is open and the treater fill conveyor is running as the scale is discharging. You can also see that the seed wheel, atomizer and drum are running on the treater and treatment is being applied from PAC 1 and PAC 2.

The system will continue to discharge from the scale until the scale reaches zero and the pumps will continue to apply treatment until the low level sensor above the seed wheel quits sensing seed.

Once the low level sensor no longer senses seed the treater will go into cleanout mode and will run in reverse as setup from the treater setup page. Once the treater is cleaned out, you can return to the home page to print the order ticket and/or order receipt.
Discharging an Order in Shots

This section will step you through the process of using discharge shot control. This feature allows you to discharge portions of your scale at a time instead of always discharging the entire scale. This feature can be enabled or disabled from the order setup in the database or from the order management on the home page. If shot control is enabled the system will pause every time the scale gets ready to discharge, asking the operator to select a discharge mode. The system will also automatically navigate you to the Scale page where you will be prompted to make this selection.

1) The image to the right shows the selection box. Selecting “All” will simply discharge the entire scale, while selecting “Shot” will prompt the operator with an additional window asking for the desired shot size.

2) This image shows the Scale Discharge Shot Control Window. Following are descriptions for the different fields in this window.
   (A) Scale Actual – This reads the actual amount of weight currently in the scale
   (B) Desired Shot Size (lbs) – This is where you enter the desired shot size. The scale will discharge this many lbs off of the scale
   (C) Start Shot – Once you have entered your desired shot size, pressing this Start Shot button will open the scale gate and begin discharging the shot
   (D) Discharge Preact – This is how many lbs early the scale gate will begin to close before the target weight is met. This value will usually be somewhere between 80-120 lbs.
   Example: If you select a shot size of 2500 lbs and you end up with a shot size of 2575, you need to increase this Discharge Preact value by 75 lbs.
   (E) Settle Time – This is the amount of time that the system will give the scale to settle before the weight is grabbed and the ticket can be printed.
   (F) Empty Scale if Less Than – This value is designed to keep you from ending up with a small amount of seed left in the scale at the end of all your shots. In this example, if there are 2540 lbs left in the scale and you select a shot size of 2500 lbs the scale will completely empty out so that you don't end up with 40 lbs left in the scale.
3) Once the shot has been discharged from the scale, the “Start Shot” button will be replaced with a “Print Shot” button. Before the next shot can be started, you are required to print the shot. Pressing the “Print Shot” button will print the shot details to the slip ticket printer.

4) Once the shot has been printed, the Start Shot button will appear again and you can either change the desired shot size or run another shot of the same size.

5) Once the scale has been completely discharged, you will need to return to the home page and press Master Print to print an overall order ticket for the job.
9 – KSi AutoData V3.2

Description of KSi AutoData software, hardware and Operation Instructions.

KSi AutoData is a database solution that allows data to be entered and recorded in a database on a provided data server computer. This server computer houses the SQL server database and has a local installation of the KSi AutoData web app installed. Data can be entered either from the provided data server computer or from another computer on the network. Installing a printer on this server computer also allows for printing of an order receipt, tech report or pick up order list from the touch screen to an 8 ½ x 11 page.
KSi AutoData Setup

Hardware Setup

Your KSi AutoData package comes with a pre-configured and setup database server computer. This computer needs to be plugged into the network switch that is inside your KSi Automation panel. For convenience purposes, there is an ethernet port in the grace port on the left side of your panel that you can plug your server computer into. The image on the right shows the server computer plugged into the graceport on the KSi Automation Panel.

Once your server computer is plugged into your KSi Automation panel, your system will go online with the database and begin communicating. At this point, you can turn your tanks online to begin syncing your tank data (see Chapter 5 for more details on syncing your tank parameters). You can also begin loading up orders from the database from the home screen on your touch screen.
**Printer Setup**

The KSi AutoData package comes with the capability of printing receipts, tech reports and pick up order lists from the touch screen. The following steps explain the process of setting up a printer on your server computer so that you can print these reports to a standard printer capable of printing 8 ½ x 11 sheets of paper.

A) Install printer on server computer. To install a printer, plug your printer into your server computer and then go to Devices and Printers and then add device. Follow the wizard to install your printer. Take note of the printer name after the installation as you will need that in step B. 5.

B) Once print is installed on server computer follow these steps on your server computer to set up reports to print to the installed printer:

1) On server computer go to start → All Programs→ OPC Systems.Net and select “Configure OPC Systems” as shown in the image on the right.

2) Once OPC Systems.net is open select “Configure” along the top menu and then select “Reports”. This will open up a Configure Reports Tab.

3) Along the left side of the page, select “Local” as shown in the image to the right.
4) This will open up to show the available reports for your AutoData System. In the column to the right of where you just selected local, there are 6 different reports listed here. Clicking on any of these reports will open up more details about the specific report. To set the printer details for the “PickUP Order List Report Print”, select that report as shown in the image to the right.

5) The image below shows the details of the PickUp Order Print report. To set the printer, the “Printer Name” field needs to be the exact same name of the printer that was set up in step A). To be sure that the name is exactly the same, it is recommended that you copy and paste the printer name from your devices and printers menu and paste it here.

6) Once you have the printer name entered, select “Apply Changes” on the bottom of the screen as shown in the image on the right.

7) You will want to repeat steps 4-6 for the “PickUP Order Receipt Print” and the “PickUP Order Tech Report Print”.

Once all three of the Print Reports have been edited to have the printer name added and the changes applied, press the “Save” button on the top of the page. When you press save, you will want to overwrite the existing saved configuration file by choosing “Yes” when prompted.

You can now print these reports to your printer from your KSi Automation Panel.
Network Setup

KSi AutoData is a web app that allows you to access the same information from any computer or mobile phone that is on the same network as the server computer. All the devices within your KSi Automation system communicate over Ethernet through a network switch inside your KSi Automation panel and every device has a manually set IP Address. The provided server computer communicates with the control system the same way through the network switch in the KSi Automation Panel. The IP Address for this computer is set to 192.168.1.105. **If this IP address is changed on the server computer then the control system will no longer be able to see the server computer and therefore your system will go offline.**

In order to fully take advantage of your KSi AutoData package, it is recommended that you connect your office network into the network switch inside the KSi Automation Panel with a Cat5 ethernet cable. Once this is done, you can now configure your server computer to be on your office network, as well as the KSi Automation system network, which will allow you to access the web app from any computer on your network.

Adding a 2nd IP Address to your server computer that matches your office network configuration can be done by following the steps below. (This IP address needs to be a static IP address and should not be able to be assigned by your networks DHCP server to any other device)

1) On the right side of your desktop of your server computer, select the Network and Sharing icon.

2) Within the network and sharing center, select “Change adapter settings” along the left side of the window as shown in the image to the right.

3) Right click on “Local Area Connection” and then select “Properties”. This will open up the Local Area Connection Properties window.
4) Within this window, select “Internet Protocol Version 4 (TCP/IPv4)” and then select “Properties”.

5) The image to the right shows the property window. In this window, you will see the IP address configuration that is pre-setup on this computer. **It is important to NOT change any of these settings as any change here could cause your server computer to quit communicating with your KSi Automation control system.** Within this window, select the “Advanced” button.

6) Within the “Advanced TCP/IP Settings” window you can add an IP address and a Default Gateway in addition to the pre-configured IP Address and Default Gateway already setup. The image to the right shows this window and where to click to add an additional IP Address (Click the “Add…” button under the IP address window).
7) This is where you will add an IP address that should match the network configuration of your office network. You will also need to add a subnet mask that matches your office network as well. Once you have typed in this address, remember this address as you will use it later, and then press “Add”.

8) To add a Default gateway, click the add button under the default gateway section and then type in the new Gateway in this window and then click “Add”.

9) Once you have added the additional IP address and you have your office network plugged into the network switch within your KSi Automation Panel, you should have access to your network computers from the server computer and vice-versa.
Database Backup Setup

Your server computer comes pre-installed with a SQL Server backup program called “SQLBackupAndFTP” that will backup your database on a daily basis. This program is pre-configured to run a backup of your database daily at 5 pm. These backups are stored on your desktop in a folder called “Database Backups”. It is recommended that you transfer these backup files to another computer on a frequent basis so that you have a recent copy of your database in case of a hard drive failure on your server computer.

You can also open up the SQL Server Backup and FTP program and customize the backup settings so that the backup is stored on a network computer or an external hard drive that you plug into your server computer. Following are steps to adjust the default settings for this program.

1) Go to Start → All Programs → SQLBackupAndFTP and select “SQLBackupAndFTP” as shown in the image on the right.

2) This will open up the SQL Backup and FTP program and with the pre-setup configuration. The image below is what this program looks like.
3) The first section is where you want the program to store the backups. As shown below, the default is to store the backups in a folder on the desktop called “Database Backups”. If your computer is set up on your office network it would be a good idea to change this location to a folder on another computer on your network. The other option would be to plug in an external hard drive into your server computer and then set the location to that external hard drive. It is always a good idea to store your backups on a separate device than the device that is using the program, which is the server computer in this situation.

![Backup Location](image)

4) The second section relates to sending the backup file to an FTP Location. If you have a computer set up as an FTP Server, you may be interested in setting your backup to be sent to your FTP Server. To use this tool, check the “Send Backups to FTP Server” check box and then click into “FTP Settings” to set up your FTP Server.

![FTP Settings](image)

5) You may also be interested in setting up an email confirmation to yourself so that you can confirm that a backup of your database was successful or to alert you when the backup was unsuccessful. The third section allows you to set up an email address to receive these confirmations.

![Email Settings](image)

6) The last section is where you can set the time of day that you want your backup to take place. **It is highly recommended that you run your backup daily.**

![Backup Schedule](image)
Accessing KSi AutoData Web App

Accessing the Web App on Server Computer

Your server computer comes setup with a shortcut on the desktop for the KSi AutoData V3.2 web app. The shortcut icon is the icon on the top left side of your desktop and is called “KSi AutoData V3.2”.

Double clicking this icon on the desktop will open up the KSi AutoData web app where you can begin viewing, entering or editing data.

If you ever lose this icon, you can access the web app on your server computer by typing in the following in the URL of your internet browser, “localhost”, and then press enter.

Accessing the Web App on Network Computer

Once you have setup your server computer to be on your office network, you can access the web app from any computer by opening up the web browser on your computer and then typing into the URL the IP address of the server computer that you setup in the previous section.

In the image below, we have entered an IP Address of 192.168.1.105. If this is the correct IP address of the server computer then this will pull up the Auto Data web app. You will want to type in the IP address here that you set up as your 2nd IP address on your server computer here.
**KSi AutoData Web App Overview**

**Navigation**

Along the top of the KSi AutoData Web App is a navigation bar. This bar has the links for all the different pages within the web app.

- **Customers** – From this menu you can view, edit and add customers
- **Pick Up Orders** – From this menu you can view, edit and add Pick Up Orders. Pick Up Orders are pre-setup orders that can be loaded up to on the touch screen and ran.
- **Pick Up Transactions** – From this menu you can view, edit and add Pick Up Transactions. Transactions are completed pick up orders.
- **Treatment Recipes** – From this menu you can view, edit and add Treatment Recipes.
- **Seed Data** – From this menu you can view, edit and add seed related information, such as Seed Supplier, Seed Supplier Brand, Seed Kind, Seed Lot, Seed Variety and Seed Sources.
- **Users** – From this menu you can view, edit and add users.
**Icons**

All of the reports and tables within the web app have a row of icons along the top of the table that allows you to do specific tasks.

(A) Add – Will take you to a new entry form for the section of the web app you are currently viewing.

(B) Delete – Deletes selected items.

(C) PDF Report – Prints current report to a pdf.

(D) Microsoft Word Report – Prints current report to a Microsoft Word document.

(E) Export to Excel – Exports current report to Microsoft Excel.

(F) Export to CSV – Exports current report to CSV file.

(G) Import Data – Opens an import wizard to guide you through importing data into the table you are currently viewing. (see the adding customers section for more details on importing)

(H) Refresh – Refreshes current report or table.

(I) Reset Filters – Resets all search filters to be blank.

Also, every record within a report has a set of icons to the left of the record that allows you to do specific tasks related to the related record.

(A) Show Record – Shows all the details of the related record.

(B) Edit Record – Opens up the related record in an edit form where edits can be made and saved.

(C) Copy Record – Copies the record details to a new entry form. From here changes can be made to the copied record and saved as a new entry.

(D) Delete Record – Deletes the related record.
Setup Users

Every entry within the KSi AutoData web app can be tied to a specific user.

Add Users

Your KSi AutoData database comes with a default user, “KSi AutoTreat Operator”. Any entry done from the touch screen will have this user tied to the record or entry. To add a new user, navigate to the “Users” tab and select “Add User”. The image below shows the new user entry form where you can type in a user name and select an entry date and then “Save”. Once a user is entered, their name can always be edited under the “Users” menu or by pressing the edit icon besides their name in the “Show User” or “Group By User” reports. Note that a user cannot be deleted if they are tied to any other record within the database.

Users Report

To view a report of the users, under the “Users” menu header, select “Group by User”. This report allows you to search for a particular user and then view the entries they have had in the following tabs, Pick Up Order, Seed Lot, Seed Variety, Treatment Recipe, Customers.
Setup Seed Information

Seed information is broken up into sections as shown in the “Seed Data” menu header to the right.

Seed Supplier Brand

Seed supplier brands can be added and then selected from a drop down box when creating a seed variety. To access the seed supplier brand details, mouse over “Seed Supplier Brand” in the “Seed Data” menu, this will open up a menu selection to the right. A seed supplier brand cannot be deleted if it is actively associated with a seed variety. In order to delete a seed supplier brand, all the seed varieties with that seed supplier brand need to first be deleted.

Add Seed Supplier Brand

A default entry has been setup called “N/A”, so if you do not choose to use this option you can always select the default seed supplier brand, N/A, when later setting up a seed variety. The image to the right shows the “Add Seed Supplier Brand” form window. Seed supplier brands can be edited by selecting the “Edit Seed Supplier Brand” selection in this menu.

View Seed Supplier Brands

To view the seed suppliers by seed varieties, select the “Variety By Seed Supplier Brand” in this menu. Below is this report showing the supplier brand and all the seed varieties that have been entered with that brand name.
**Seed Supplier**

Seed suppliers can be added and then later selected when setting up a seed variety. To access the seed supplier details, mouse over “Seed Supplier” in the “Seed Data” menu, this will open up a menu selection to the right. A seed supplier cannot be deleted if it is actively associated with a seed variety. In order to delete a seed supplier, all the seed varieties with that seed supplier need to first be deleted.

**Add Seed Supplier**

A default entry has been entered in your database called, “Test Company”. To add a new seed supplier, select “Add Seed Supplier” and then fill out the form as shown on the right and click “Save”. This entry will now show up as an option when setting up a seed variety. These entries can always be edited by selecting “Edit Seed Supplier” from the “Seed Supplier” or by selecting the edit icon next to the record in any of the seed supplier reports.

**View Seed Suppliers**

You can view your seed suppliers by variety by selecting “Variety By Seed Supplier” from the “Seed Supplier” menu. The image below shows this report that shows all the seed varieties entered for a specific seed supplier.
**Seed Kind**

Seed kinds can be added and then selected when creating a seed variety. Examples of seed kinds would be: Soy beans, Wheat, Cotton, etc. To access seed kinds, mouse over “Seed Kind” in the “Seed Data” menu and a selection menu for seed kinds will appear to the right. A seed kind cannot be deleted if it is actively associated with a seed variety. In order to delete a seed kind, all the seed varieties with that seed kind need to first be deleted.

**Add Seed Kinds**

A default entry has been entered into your database called “Soy Bean”. This entry can be edited by selecting the “Edit Seed Kind” menu (or by selecting the edit icon next to the record in the report view) or new seed kinds can be added by selecting “Add Seed Kind”. The image above and to the right shows this add seed kind form.

**View Seed Kinds**

Seed kinds can be viewed by variety by selecting the “Variety By Seed Kind” selection from the menu. The image below shows this report where you can search for a seed kind and then see all the seed varieties associated with the seed kind.
**Seed Lot**

Seed Lots can be added and then later selected when setting up a seed source. The seed lot is tied to a specific seed source and will be recorded with any transaction that is ran. A seed lot cannot be deleted as long as it is actively part of a seed source or part of a pick up order or transaction.

**Add Seed Lots**

Seed lots can be added by selecting the “Add Seed Lot” selection within the “Seed Lot” menu. This will open up the add seed lot form, as shown below. In this form, enter the seed lot number, in the “Seed Lot Data” field. You can also enter the Seed Count (in Scale Unit of Weight, ie. Lbs), as well as you can give it a shipment number, username and date entered if you would like.

![Add Seed Lot Form](image)

**View Seed Lots**

Seed lots can be viewed by seed sources by selecting “Source By Seed Lot” in the selection menu. This will show the seed lot report, as shown below, where you can search for a specific seed lot and then see the associated seed sources for each seed lot.

![View Seed Lots](image)
**Seed Variety**

Seed varieties can be added and then later selected when setting up a seed source. When a seed variety is selected as part of a seed source this variety name is recorded as part of the order transaction. Seed variety's cannot be deleted as long as they are tied to a seed source or part of a pick up order or transaction.

**Add Seed Varieties**

Seed varieties can be added by mousing over the “Seed Variety” selection under the “Seed Data” menu and then selecting “Add Seed Variety”. This will open the add seed variety form as shown below. In this form, you will enter a seed variety name and then select a supplier, supplier brand and seed kind from previously entered data. You can also select a username and a created date.

**View Seed Varieties**

Seed varieties can be viewed by seed sources by selecting “Source By Seed Variety” in the selection menu. This will show the seed variety report, as shown below, where you can search for a specific seed variety and then see the associated seed sources for each seed variety.
Seed Source

Seed sources are locations that your seed is stored in. This could be either a seed tank or a seed box location. Your system comes set up with 12 seed sources to match your touch screen which is also preconfigured for 12 seed sources. Seed sources should not be deleted as they are needed to communicate with the touch screen’s seed sources.

Add Seed Source

Since all 12 seed sources are already setup, there is no need to add any additional seed sources beyond the preconfigured 12 sources. Adding any additional seed sources will not communicate and sync with any of the 12 seed sources on the touch screen.

Editing Seed Sources

Note: Do NOT edit the Seed Source name. These need to remain as TANK 1 through TANK 12 in order for the system to communicate correctly with the touch screen. Seed sources can be edited by going “Seed Data” → “Seed Source” → “Show Seed Source” and then select the edit icon to the left of the tank that you want to edit. This will open up an edit form where you can make changes to the specific seed source and then save the record. **Important** When editing a seed source, the Seed Source Amount, Seed Source Capacity, Seed Wheel Cal, Seed Pre Act, Seed Dis Rate and Seed Cleanout fields need to have a value in them. If they are left blank they will not sync with the touch screen. Instead of leaving the values blank, enter a “0” in the fields. Any changes made to a seed source within the KSi AutoData web app will automatically sync over to the touch screen as long as the Automation panel is online with the database and the bin is online. Alternatively, any changes made on the touch screen within the tank setup window will automatically be synced back to this database table (See Chapter 5 for more details related to tank syncing). It is important to note that the same lot ID cannot be used for more than 1 tank, doing so will cause a conflict on your automation system.
**Viewing Seed Sources**

Seed sources can be viewed by pick up orders so that you can see which pick up orders you have for each seed source. This is accessed by selecting “Orders by Seed Source” from the “Seed Source” menu. This report is shown below and you can see that you can search for a specific seed source and then see the pick up orders that are related to that seed source.
Setup Treatment Recipes

Treatment recipe data is accessed by mousing over the "Treatment Recipes" menu header and then selecting one of the menus that drops down from this header. Treatment recipes are setup and configured from this menu and then when you are setting up a pick up order you select from your already setup treatment recipes.

Add Treatment Recipes

To add a treatment recipe, select "Add Treatment Recipe" from the "Treatment Recipes" menu. This will open up the new treatment recipe form as shown to the right. The database is setup to be able to setup a recipe from 8 different pumps. You will notice on this form that there are fields for IP 910 – IP 920, these are the different treatment sources (with IP 910 being your pump 1 and IP 980 being your pump 8). You will give the recipe a name and a description and then fill out the remaining details for each specific IP pump that will be used to apply this recipe. When filling out a treatment rate, only enter a value in the oz per 100 or the mg per seed (if mg per seed is used you also need to enter a value in the g per oz field) as this is telling the system at what rate to apply the treatment item. Also, if you are entering your rate in Mg per seed, and your label reads in lbs per gal. instead of g per oz, you need to check the “LBS Per GAL” check box for the appropriate treatment tank. Towards the top of the form is also a check box to enable either of the auxiliary’s for your control system.
View Treatment Recipes

Treatment Recipes can be viewed by selecting from the “Treatment Recipes” menu either “Show Treatment Recipes” or “Orders By Treatment Recipe”. The orders by treatment recipes report will show the treatment recipe and then all the related pick up orders created with that treatment recipe. Part of the “Show Treatment Recipe” report is shown below. On your computer, you will be able to see more of the details related to this treatment recipe by scrolling to the right or else clicking the “Show Record” icon (magnifying glass) to the left of the treatment recipe name. On the touch screen, when searching for a recipe on the home screen, the “Recipe Name” is the name that you are searching for from the touch screen. When setting up an order from the touch screen, you will need to know the recipe name as shown in this report. Also, if any changes are made to the recipe from the touch screen and then saved, those changes will copy back to the treatment recipe in this table. If, from the touch screen, a new treatment recipe is created and then “Save As” is pressed, that new recipe will also show up on this report as an available treatment recipe when setting up a new pick up order.

Edit Treatment Recipes

To edit a treatment recipe, it is recommended to load the recipe up to the touch screen in the manage recipe window, make the changes to the recipe and then clicking “Save”. See Chapter 4 for more details on how to edit and save a recipe from the touch screen. However, the recipe can also be edited from the KSi AutoData web app by selecting the edit icon to the left of the recipe that you want to edit. This will bring up the recipe form where you can make changes and the save.

**Important**: When editing a recipe within the web app, you need to have a 0 in every field that you do not have a rate value. For example, if you are entering a recipe that has oz per 100 rate of 3.1 from IP 910, you also need to enter a “0” in the mg per seed field and the g per oz field. If these fields are left blank, you will not be able to load the recipe up to the database. In addition, for any pumps that are not being used, you need to enter a “0” in the oz per 100, mg per seed and g per oz field for that pump. When you press save, there cannot be any field that is blank.
Treatment Recipe Details (How to treat by AI MG/SEED)

A treatment item can be added with an application rate of oz/100 weight or by AI MG/Seed. This section shows how to enter a recipe item for different types of application rates.

The top images show the add treatment recipe form from the database while the image below shows the recipe form on the AutoTreat V3.2 Touch Screen. The numbers 1, 2 and 3 represent the three different recipe items that are part of this recipe called “Treatment Test”. Each of the items tied to this recipe has the same fields that can be entered specifically for the recipe item. Following is a description of the A, B, C and D fields that are part of each recipe item.

(A) OZ/100 – If the treatment item rate is specified in oz/100 weight on the label then that rate is entered in this field. In this example, Item 1 will apply 3.5 oz of treatment per 100 lbs of seed.

(B) AI/Seed – If the treatment item rate is specified in mg ai/seed then that rate is entered here. In this example, treatment items 2 and 3 will apply .17 active ingredients per seed.

(C) Concentration – If applying by ai mg/seed, a concentration value is also needed. This value will be in either g per oz or lbs per gal. On recipe item 2, the concentration is 4.1 lbs per gal and on recipe item 3, the concentration is 14.529 g per oz.

(D) G per oz and lbs per gal can be toggled back and forth on the touch screen by pressing directly on the AI/gal or AI/oz wording. In the database, if the concentration should be entered in lbs per gal, the LBS Per GAL check box needs to be checked. If the concentration is in g per oz, the LBS Per Gal should be unchecked.
Setup Customers

Within your KSi AutoData web app, you have the ability to setup all your customers so that they can be selected from a drop down box when setting up a new pick up order. This customer can also be searched for and selected from the touch screen when setting up an order from the touch screen.

Add Customers

New customers can be entered a few different ways. The image below shows the “Add Customers” form that is accessed by selecting the “Add Customers” option in the “Customers” menu. From this form, you can enter your customer information and then click save. Required fields are: Operation, First Name, Last Name, Address 1, City, State and Zip. It is important to note that when setting up a new pick up order, you will be selecting from a drop down box that shows the Operation name. For that reason, it is recommended that the operation name you enter be unique. Once you have all the customer information filled out you can either “Save” or “Save and New” which will save and reset the form so that you can enter another customer.

![Add Customers Form]

You can also add new customers from the touch screen setup; see Chapter 4 for more details related to that.
Add Customers (Import from CSV File)

You can import customers in bulk from a CSV file. Following are steps to import from a csv file. Note that you can import into most all of the tables within your web app (wherever you see the import icon) but importing customers is the most common.

1) Create a csv file with all your customers and customer information in it. If this is currently in an excel file, save the excel file as a csv file. Make sure that you have information in every required field, Operation, First Name, Last Name, Address 1, City, State and Zip, for every customer.

2) From the KSi AutoData web app open either the “Show Customers” or “Order by Customers” link under the “Customers” header. Within this report, click on the import data icon as shown to the right.

3) This will open the Import Wizard. Click the “Choose File” button, as shown to the right and then browse to the csv file that you created in step 1. Once you have selected the file, press “Next” on the bottom of the wizard.

4) This will take you to a page that will show you the first 5 columns of data and then allow you to select from the drop down box which field the column should be entered in. For example, for the customer name, you will want to select “Operation” from the drop down box. There is also a check box at the top of the column that you need to make sure is checked if you want to import that column into your KSi AutoData database. Remember that you need to have every required field selected from the drop down and the check box checked.
5) Once you have selected all the appropriate columns and checked all the import check boxes above the columns that you want to enter, press the “Import” button on the bottom of the wizard.

6) If all the required fields validated correctly (meaning that you had data in all the required fields for every customer) all the records will successfully import into the database and you will get a message as shown to the right.

**View Customers**

Customers can be viewed by pick up order by selecting the “Orders by Customers” link under the “Customers” menu. This will show the report as shown in the below image. You can search for a specific customer and see all the related pick up orders for that customer.
Setup Pick Up Orders

Pick Up orders are orders that are created with the intent of running the order at a later date. Once a pick up order is created, that order can be searched for by either the pick up order number or pick up order name from the touch screen. A pick up order can only be run once and once it is run once the KSi Automation system will lock the job from being run again.

Add Pick Up Orders

From the AutoData web app, pick up orders can be created by clicking on the “Add Pick Up Orders” link under the “Pick Up Orders” menu. Shown below is the pick up order form. The pick up order is automatically assigned a pick up order number but you need to give it a name. It is a good idea to create a name that makes sense to you so that from the touch screen you can pull up the pick up order you want by searching for the pick up order name.

In addition to the pick up order name, you will also enter a seed amount and then check the appropriate check box (Lbs, Unit, Seed Count). If you are running this order through an AutoTreat system and the treater, you will give the order a “Seed Treat Rate” and check the “Treatment Enable” box. From this form, you can also choose if you want automation loadout control and/or scale shot control on or off by selecting/deselecting the appropriate check boxes for these two selections.

Next, you will select an operation name, seed source and treatment recipe from drop down boxes and then add a user name and a date as well as a comment if you would like.

Once this form is filled out, press either “Save” or “Save and New” to enter an additional order.
**View Pick Up Orders**

Once a pick up order is entered, they can be viewed from the web app by selecting the “View Pick Up Orders” link under the “Pick Up Orders” header. This report will show you all the pick up orders that have been created but you can refine the results by selecting search criteria, such as, by selecting if the order is complete or not, or by searching a pick up order date range.

From the touch screen, you can also print off a pick up order list to your printer installed on your server computer. See Chapter 4 for more details on how to print this list but you can print a pick up order list based on a range of pick up order numbers.

There is also a link called “Print Pick Up Orders” under the “Pick Up Orders” header. This report is a stripped down report of all the pick up orders that allows the results to be more printer friendly. You would want to use the print pick up orders report to print off pick up orders from the web app.
Setup Pick Up Transactions

Pick Up Transactions are where any jobs that have been ran from your KSi Automation system are stored. A pick up transaction is tied to a pick up order number and this record will record what actually took place on the order. For example, the transaction will record the actual amount of seed ran and the actual amount of treatment that was applied from any particular pump. This is the report that you will view when wanting to see the history of orders that you have ran through your system.

View Pick Up Transactions

Viewing pick up transactions is accessed by selecting “View Pick Up Transactions” under the pick up transactions header. This will open up a reports page that allows you to search for a specific transaction or a group of transactions by selecting different search criteria. You can see the different search criteria in the image below. Example, to view all your transactions for a specific point in time, you would enter a begin date and an end date in the fields beside “Pick Up Transaction”.

You may be interested in exporting all these transaction results to excel. To do this you would simply select the excel icon that is directly above the results table.

There is also a more printer friendly report of transactions which is accessed by selecting the “Print Pick Up Transaction” link under the “Pick Up Transaction” header.
Add Pick Up Transactions

Adding pick up transactions is usually not necessary as pick up transactions are automatically entered into the database from your KSi Automation control system when you print your ticket, however, in the case that you run orders from your KSi System when the database is offline, those orders will not be recorded to the transaction table. Those orders will need to be manually entered into the transaction table, which is accessed by selecting the “Add Pick Up Transaction” from the “Pick Up Transaction” header. The form below shows what this form looks like. You will need to select a pick up order for the transaction (if there is not a pick up order already created you will need to create a new pick up order which can be done by selecting the “new” icon beside the “Pick Up Order” drop down box. The rest of the fields will then need to be filled out to match the ticket that printed from your slip ticket printer on your KSi Automation System.
Chapter 10

10 - Drawings

*Appended System Drawings Page numbers do not follow main manual.*