"The Pneumatic Toggle Press Innovators". **Since 1947.**

AUTOMATED INDUSTRIAL MACHINE, INC

TOGGLE-AIRE® DIVISION

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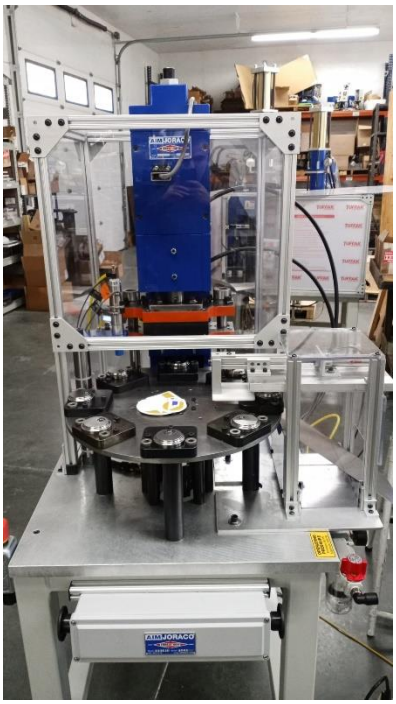


1011RT-PLC:

1011RT Automated Indexing System

Installation, Operation, and Maintenance

IMPORTANT

It is the responsibility of the employer/purchaser to provide his or her employees with proper point of operation guards, and to ensure that this equipment is used in accordance with the manufacturer's recommendations as well as any OSHA, federal, or state regulations that are applicable to such equipment. Because it is impossible to anticipate the conditions under which our equipment will be operated, additional safety devices and methods may be required to ensure operator safety. Besides conforming to all federal, state, and local codes, the buyer should consider the safety of the entire operation involving any press, and see that any additional guarding, training, and maintenance deemed necessary is developed and enforced to protect the well-being of the operator.

THINK SAFETY . . .
. . .WORK SAFELY

Contents

Section 1 – Installation

1.1 General Specifications

The system described in this document refers to a custom machine developed for the use of automatic staking to join two aluminum components.

1.2 Features

The following components are included and integrated into the system described:

- Pneumatic press
- Pressure regulator
- 1011RT, servo indexer
- Ejection mechanism with chute
- Part present sensor/Pre-press station
- Physical guarding around moving components
- Programmable logic controller
- Two-hand anti-tie down actuator

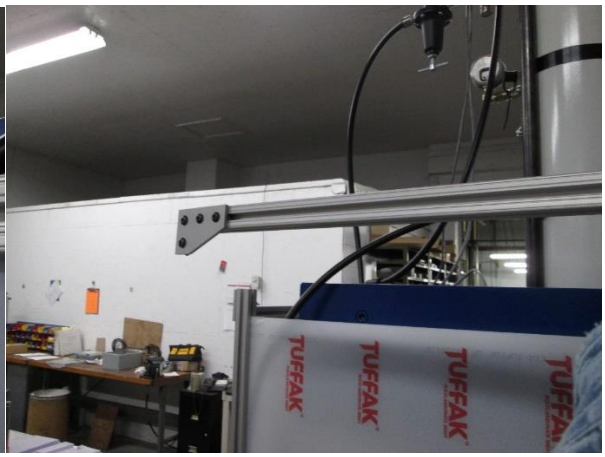
1.3 System Requirements

- Compressed air supply 90-100psi
    - Recommended plumbing to be rigid piping or polyethylene tubing
- 110V VAC outlet
- 70” x 60” approximate minimum floorspace

1.4 Unboxing and Assembly

Due to size constraints, this system may have to be partially disassembled for shipment.

Step 1:
Remove rear and side guard panels on table assembly. Screw heads just need to be loosened and tap the heads in to unlock. The top bar can then lift to access the panel.



Step 2:
Remove the four (4) bolts from the system frame/skid

Step 3: Lift system off skid

Step 4: Lift System using lift points specified above

Section 2 – Operation

2.1 Loading/Purging Parts

Before loading any parts into the system, thoroughly check that the loading assembly and indexing table are entirely empty. If these components are filled with any parts, then they must be purged.

To purge the loading assembly, the existing parts must be manually taken out. To purge parts in the indexing table, if the system has already completed the homing process, the machine should be run in manual mode without loading any new parts until the indexing table is cleared of parts. This process should be completed each time before the machine is shut down to ensure the indexer is empty for next startup procedure.

CAUTION: If there are parts present in the indexing table and the homing process needs to be completed then the parts need to be manually removed at the ejection station as the indexer homes. If parts are not removed at the ejection station during the homing process, then system jam is likely to occur.

Once it's confirmed that there are no parts in the system then new parts may be added. Parts should be manually placed into loading assembly one at a time and actuated into position by either triggering the two-hand controller (Manual Mode) or sliding down assembly into load position (Automatic Mode).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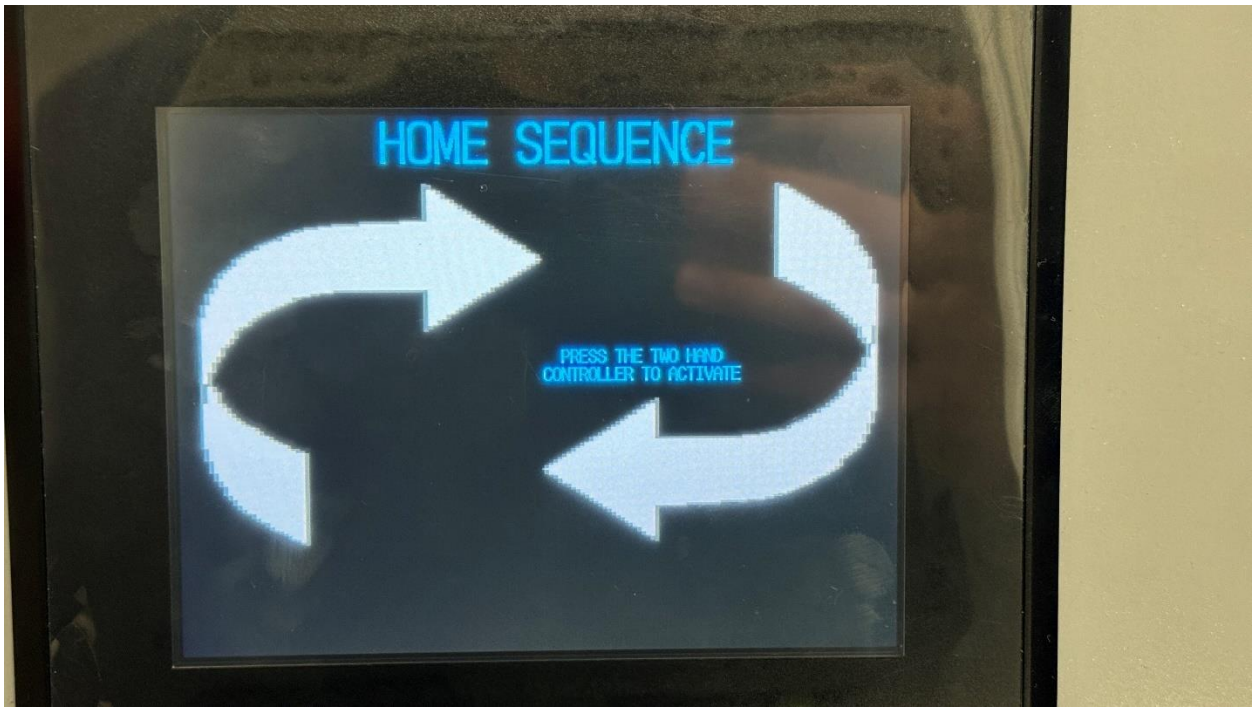
2.2 Pneumatic Controls

Before turning the system on, supply air must be connected. For directions connecting the air supply, refer to the included Related Press Series Manual.

2.3 User Interface

When the system is powered on, the "**Home Sequence**" screen shown below will be displayed. This screen indicates the system must be "homed" before normal operation can proceed.

CAUTION: Before the homing sequence begins, ensure that there are no parts present in the indexing table. If there are parts present in the indexer see section 2.1 Loading/Purging Parts before proceeding.



Follow the instructions on screen and press the two-hand controller to begin the homing sequence. Once the index table has reached home position, the pneumatic components will actuate a single time. Touch the display to advance to the main screen.

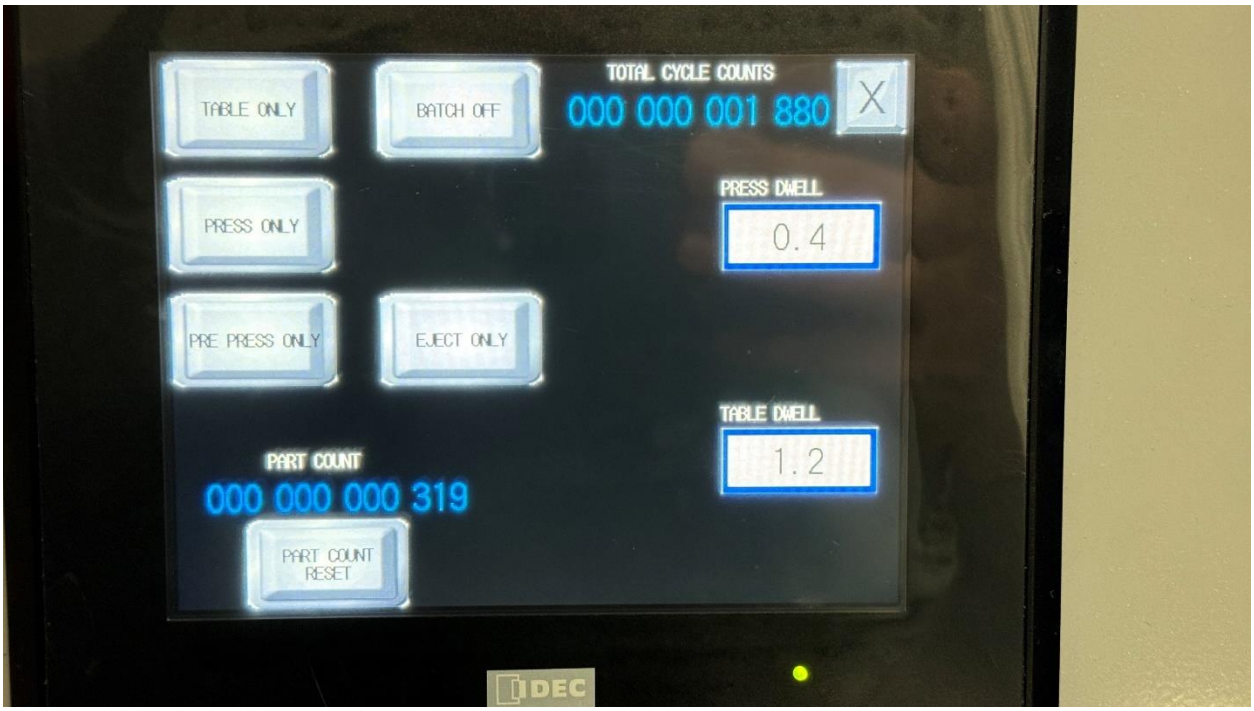
The "**Main**" screen is shown below. This screen gives the operator access to information regarding general operation of the system. This includes selecting either Manual or Automatic Mode and controlling/displaying the current batch numbers (when active) in both a graphical interface and a numerical display. In addition, this screen allows an operator to access the "Settings", "Diagnostics", and "Admin" screens.

In Manual Mode, the system will actuate a single station per each press of the two-hand controller. In Automatic Mode, the system will operate continuously after the two-hand controller is pressed. To pause or halt the system during automatic operation, simply place the system back into Manual Mode. If the batch sequence is on and reaches the completed value, the system will pause, and a pop-up screen will display.

NOTE: Due to safety requirements, the staging (load track) cylinder on the loading assembly is disabled during Automatic Mode operation. An operator or mechanism must ensure the parts are in an appropriate location for the load (load index) cylinder to install parts into the indexing table.

The "**Settings**" screen is displayed below. This screen allows the operator to access "Ram Only" and "Table Only" modes. Additionally, dwell timers for several different components can be modified for diagnostics or debugging.

NOTE: Dwell timers are factory set. Upon power down, the dwell timers will revert back to factory settings.



The buttons on this screen perform the following actions:

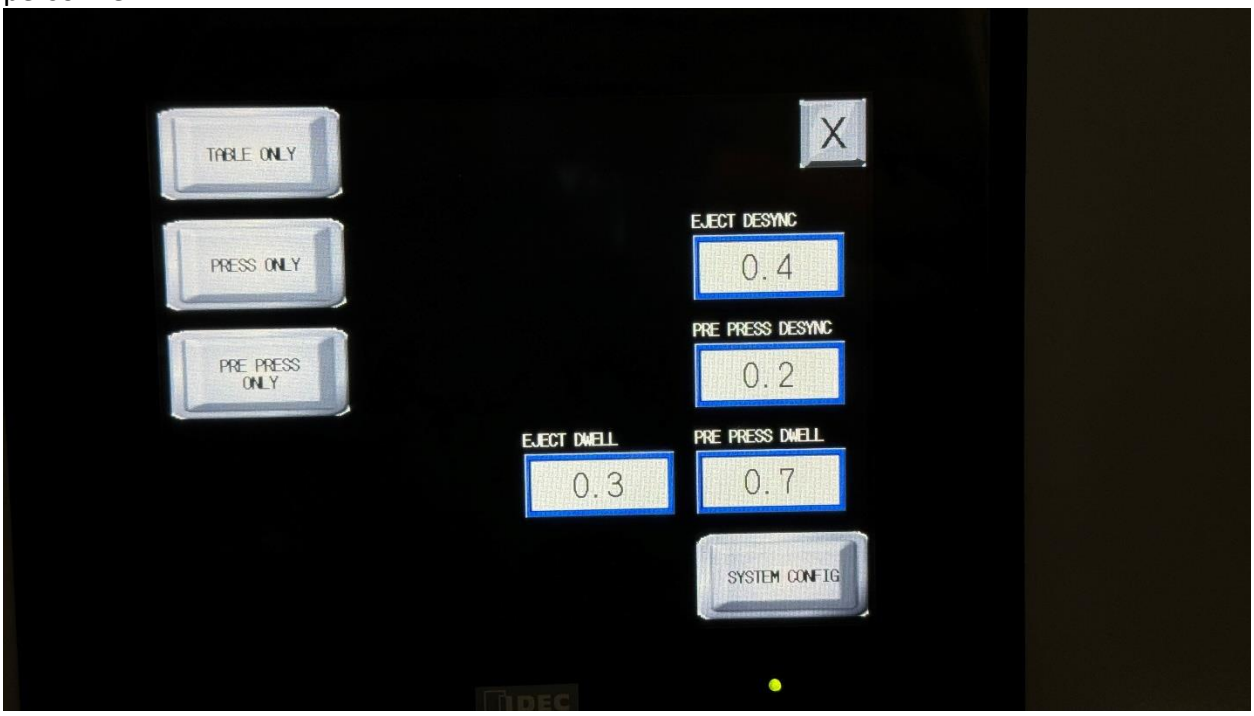
- Table Only/Ram Only
  - When active (green), upon actuation of the two-hand controller the selected action will actuate a single time.
  - You may only have (one of) either ram or table only active at any time for testing and setup. First one selected will activate.
- Batch On/Off
  - When active the batch system will be turned on and quantity settings can be adjusted via the Main Screen.
- Total Cycle Counts
  - Displays a non-resettable counter of the quantity of actuations the press has cycled through.
- Servo Dwell
  - Controls the time that the servo waits after reaching station, before it is open to a move command (other dwells need to finish as well).
- Pre Press Only
  - When active (green), upon actuation of the two-hand controller the Pre-press will actuate

- Rapid to Power Dwell (If Applicable)
    - Controls the time that the rapid advance stroke will wait after the end of stroke switch has been activated and before switching over to power stroke.
- Power Dwell (If Applicable)
    - Controls the time that the power stroke will remain on before retracting.
- Load Finish Dwell (If Applicable)
    - Controls the time that the system waits after the staging and load cylinders have finished and before releasing a move command.
- Load/Staging/Eject (Retract) Dwell (If Applicable)
    - Controls the time that the given station will wait after retracting and before giving the next command.
- Load/Staging/Eject (Extend) Dwell (If Applicable)
    - Controls the time that the given station will wait after extending and before giving the next command.

The "**Admin**" screen is shown below. This screen allows the operator to manually jog various components within the system. This screen is password protected as normal operation can be interrupted from this screen. Only approved personnel should have access to this screen.

LOGON: Admin
Password: 1710

CAUTION: Improper operation in this screen can cause damage to external devices and personnel.

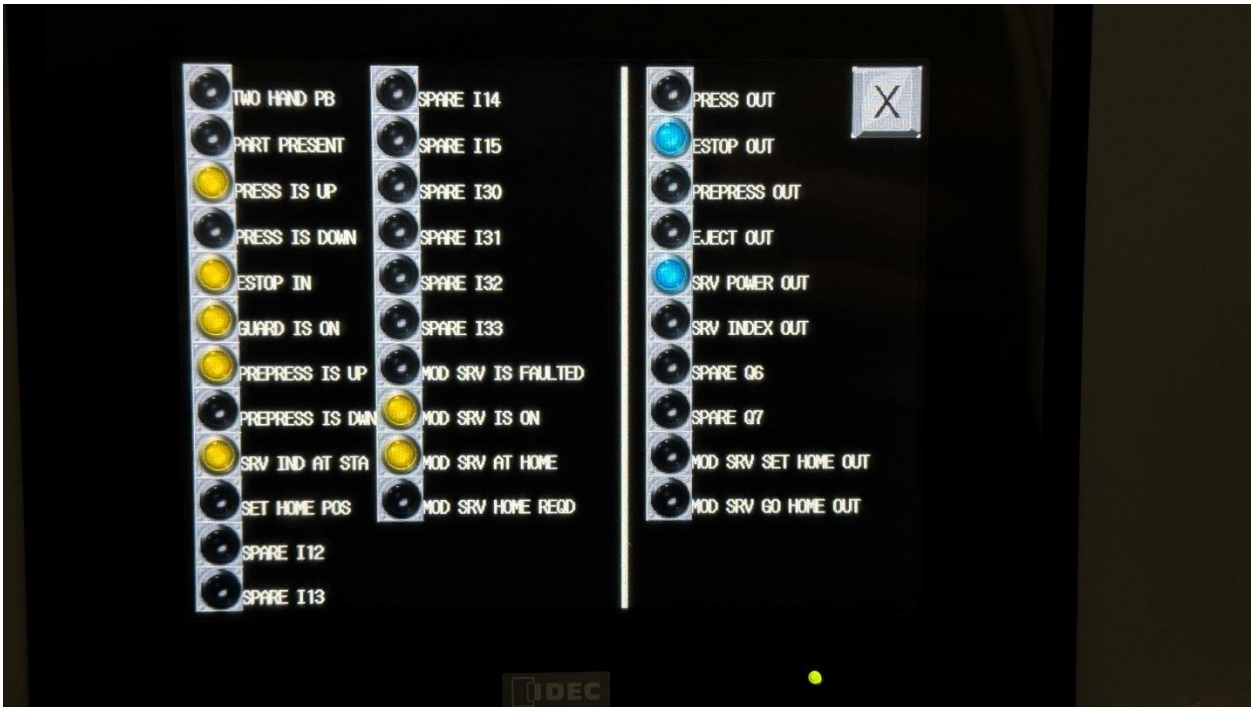


The buttons on this screen perform the following actions:

- Press Only
    - When active (green), upon actuation of the two-hand controller the press will actuate.
        - This actuation will only happen if rapid press has already been activated.
        - Press the button to retract.
- Rapid Press (If Applicable)
    - When active (green), upon actuation of the two-hand controller the rapid advance stroke of the cylinder will actuate.
        - Press the button to retract.
- Start Pick and Place (If Applicable)
    - When Active (green) upon actuation of the two-hand controller the load system will actuate and return to its steady state.
- Manual Start (Sync-Sig 2Hand)
    - When pressed this will remotely actuate the two-hand controller
        - This is best utilized to debug a faulty two-hand controller
- Eject Part (If Applicable)
    - When pressed this will actuate the ejection cylinder
- Load Cylinder Extend (If Applicable)
    - When pressed this will actuate the load cylinder
- Staging Cylinder Extend (If Applicable)
    - When pressed this will actuate the staging cylinder
- System Config
    - This will bring the operator to the configuration of the HMI settings such as brightness, timeout, and other system settings.

The “**Diagnostics**” screen is shown below. This screen displays the system diagnostics for each I/O. Indicating lights will illuminate next to the given I/O point when the device is on or active.

NOTE: In PLC logic, when the device is a “1” the indicator light will illuminate.



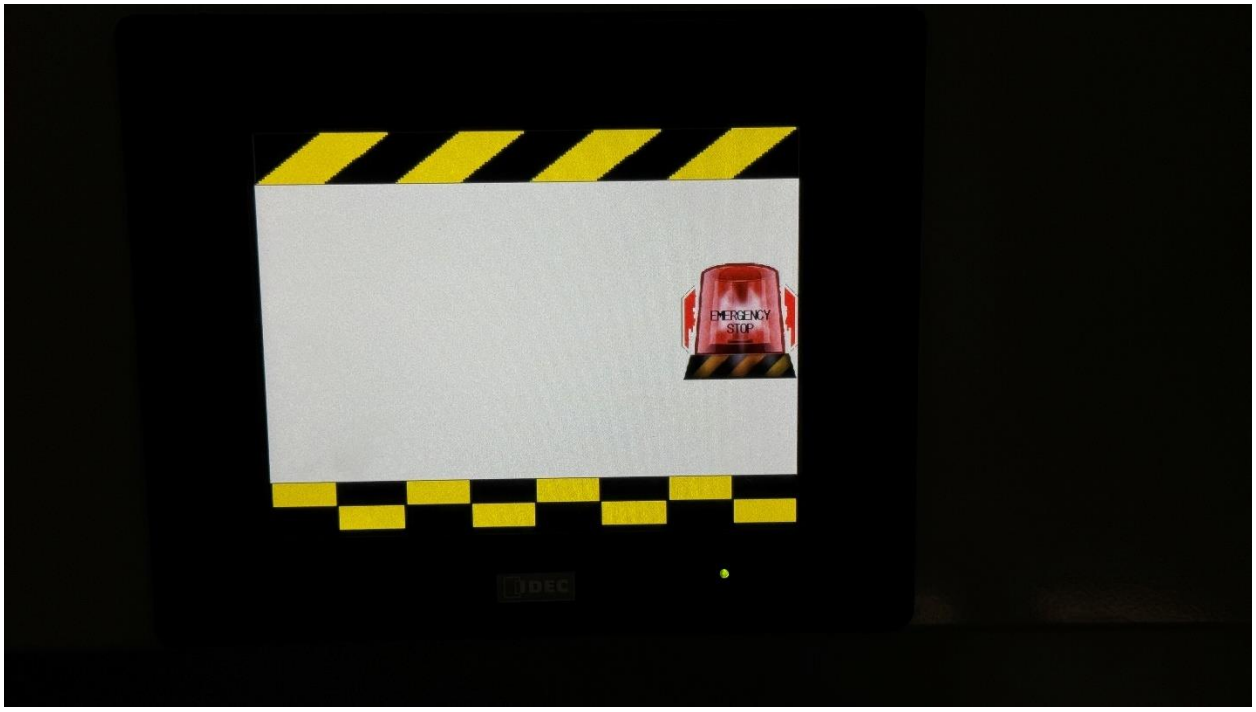
*Diagnostic Screen may vary depending on design specifications

2.4 Pop-Up and Alarm Screens

The pop-up screens will display whenever the given circumstance is fulfilled. This is shown in the image below as the batch counter being fulfilled.

The alarm screens will display with only the error in question. A screen with several error messages is shown below. For example, the “EMERGENCY STOP” will display whenever the emergency stop button is pressed. The system will attempt to continue operation and normal sequence once the error has been reset.

NOTE: When attempting to remedy a given issue be sure to lockout the machine by pressing the emergency stop.



NOTE: In certain circumstances recovery to normal system operation may not be accessible. When this occurs, the system should be powered down, parts should be purged, and the system must be re-homed to continue operation.

Section 3 – Maintenance

3.1 Preventative Maintenance

The system should be checked daily to ensure smooth operation. Specifically, the following components should be checked:

- FRL unit should always be filled with pneumatic oil and the filter should be emptied as needed.
- Wear plates at the loading, stamping and ejection stations should be checked for excessive wear.
- Underside of index plate and alignment pins at stamping station should be regularly lubricated with machine grease.
- Refer to related series manual for troubleshooting

Safe and smart practices should always be used when troubleshooting and maintaining the system components. AIM Joraco staff is available to assist with any questions you may have regarding the system.