



**UNIVERSAL RECYCLE
WITH FLOOR ID
Chute Source
9/24/20**

525 KENNEDY RD
AKRON OHIO 44305
330-733-3996

INSTALLATION

WARNING

Only experienced personnel should attempt to install, service, or operate this equipment. Some of the procedures require the opening of the front cover on the control box. This exposes potentially lethal electrical voltage.

This style of compaction system is designed for use in a facility having level access to the compacted refuse pickup point. Ramps or sills can only be navigated with special handling equipment to accommodate the wheeled refuse containers used in the system. The compactor may also be loaded manually.

Read the entire Installation Chapter before installing the Compactor. It is assumed that a specific location for the recycle system has already been established with the help of the compactor's representative. An experienced outside installation service organization may also be involved in the following effort.

1) Position the compactor with its hopper under the building's refuse chute. In new construction involving a metal refuse chute, the chute will normally have been supplied in a configuration to feed directly into the system's diverter without modification or addition. In existing installations, a transition is generally required to interface the compactor hopper to the bottom delivery end of the building refuse chute.

This transition should be of all-welded construction to prevent refuse hang-up on exposed bolts. Use welded angle iron sections as corner elements and hang the component from the ceiling of the compactor room. If the transition is to be welded to the compactor hopper, brace the hopper as needed.

2) The compactor must be anchored. Mounting holes are in all legs of the compactor. The compactor must be installed on a level floor with the four legs on the same level plain. Use a level to check level. If necessary, place shims under the legs of the machine to level it to its final horizontal position.

NOTE: ½" expansion bolts should be used at each leg to anchor the machine with the bolts passing through the shims to prevent future slippage of the shims. If the holes permit larger bolts to be used, proceed with the larger size.

Leave adequate clearance around the unit for both service access and for ventilation.

3) All electrical work must be carried out in accordance with the National Electrical Code and all State and Local Electrical Codes. Electricians licensed in the area in which the installation is being made should perform the work. A 30 Amp, 3Ph/60Hz, 3-wire, fused disconnect is required for the compactor. This disconnect should be fused at 20 amps for a 208/220 volt connection and 10 amps for a 440 volt service. A 6 foot length of liquid tight is supplied with (4) 12 gage wire leads to be hooked up to the building power (three phases and a ground). **The wall disconnect must be mounted within 6 feet** of the controller. An **OPTIONAL** smoke detector or heat detector can be connected to the control system.

Heat is connected to the last floor panel while smoke is connected to the basement controller. Both devices can lock the floor panels in the event of fire.

4) The Control Panel provides the hydraulic power to the compactor. It includes motor, pump, valves, and associated control. The system is self-contained and needs only a connection to incoming power, an adequate supply of a good grade, anti-wear hydraulic fluid, and the reconnection of the electrical umbilical cable that connects the PLC panel with the compactor. The hydraulic approach was chosen because it permits greater pressure to be exerted by the ram with more positive control using smaller power components.

5) Connect the hoses already attached to the compactor. Match the wire ties. Fill the oil reservoir tank with hydraulic oil – AW32 or equivalent. Fill until the Low Oil alarm can be cleared.

6) Engage the 30 amp wall switch. Using a non-metallic rod, carefully and momentarily press the black button in the center of the motor starter. The motor should rotate clockwise reference to the end plate of the motor. If rotation is in the opposite direction, **shut off power** at the wall disconnect and, **CAREFULLY, interchange** any two of the three wires leading **from** the motor to the motor starter. This action will reverse direction of motor rotation.

CAUTION

Ten seconds after power is turned on to the control, the ram will begin to move to its home position.

7) It may be necessary to bleed air out of the hydraulic system prior to normal operation. Select MANUAL from the START UP screen. Press *Retract* to retract the ram. Cycle between RETRACT and EXTEND. Watch the pressure display on the operator interface. When a retract pressure greater than 900 PSI is achieved, return to automatic control. Cover the photo eye with a rag to simulate compactor full. After a ten second delay, the unit will begin a compaction cycle. The ram will move to the forward position. After a 1/2 second delay the ram will retract. If the photo eye is blocked it will continue to cycle until all air has been force out of the system. A timer controls the length of time that the ram travels forward. If this time is set to too long the ram will reach the mechanical end of travel, pressure will increase and a high pressure “TRASH FULL” alarm will occur. If necessary, refer to SETPOINT CONTROL to learn how to adjust this time.

8) If you suspect that the ram is moving in the wrong direction select MANUAL. Use the EXTEND and RETRACT buttons to cycle the ram. If it moves in the wrong direction, reverse the hoses.

9) To connect the wheeled refuse container to the compactor, first shut off power to the system by pressing the Red E-Stop Button on the control panel. Move the container’s open end over the open end of the compactor and engage the ratchet hooks into the container rings. Work the ratchet to bring the container to within ½” of the compactor. **Twist** the Red E-Stop pushbutton to return power to the system. Open the hopper shutoff by withdrawing the red Stop Rod.

COMPACTOR

The compactor is designed for the loading and compaction of refuse into a totally enclosed wheeled container. A compactor will normally provide a 4 to 1 ratio in trash space reduction. Thus, the trash containers need to be exchanged less frequently. This reduces the number of trash pickups required and the amount of time that the floors are shut down because of a full container.

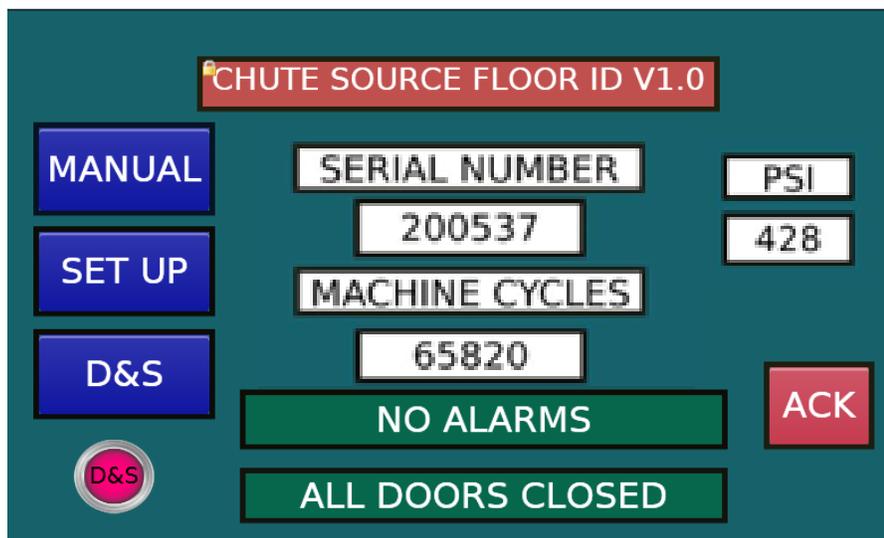
The specially designed refuse containers, into which refuse is delivered and compacted, are moved, and closed when full. They can then be rolled to an intermediate storage area or directly to the location where a trash truck can unload them.

The hopper on top of the compactor receives refuse from above and via a diverter directs it to a collection chamber. In a Bi Sort system, the material is sorted into two categories. A photocell, directed horizontally across the lower portion of this chamber, detects refuse, and initiates the compactor ram action, or indicates container full for recyclables.

The hydraulically actuated ram is energized and driven forward for an adjustable time, to force the refuse into a container. This action gradually compacts the refuse. The ram continues to travel back and forth, compacting the refuse against the material already in the container until the photo eye no longer detects refuse. The ram will then complete one additional cycle to clear trash located below the photo eye. The ram will stop in the retracted position. The cycle begins ten seconds after the photo eye continuously sees trash and ends one cycle after the photo eye is cleared and the ram has returned home.

The compactor will shut down when the container is packed to a pre-determined density (high pressure setting). The display reads "TRASH FULL" indicating that the container needs to be switched.

Prior to operating a compactor, the hopper access door must be closed. An empty refuse container needs to be locked in place. The wall disconnect must be turned on. The red Emergency Stop pushbutton must be "pulled out" to apply power to the controls. (Pull Out means twist to release). All systems are shipped with the motor starter in the tripped position. Press the blue button on the front of the starter overload relay. If this is done properly the control display should read NO ALARMS.



START UP SCREEN

The START UP screen is the display the operator will see when power is applied to the controls. It displays all system alarms and the status of all floor doors. Machine cycles are the lifetime number of automatic compactions. Serial number allows the factory to track this controller. PSI is the maximum pressure seen during the last ram movement. This number is reset at the start of ram extend or retract.

The START UP screen must be displayed to run an automatic cycle.

HOME

Compactor home –The compactor is home when the ram is in its fully retracted position.

The compactor will be sent home on power up (wall disconnect)

The compactor will be sent home after the EMERGENCY STOP pushbutton is reset.

The compactor will automatically be sent home if the system is left in MANUAL more than 10 minutes without a manual motion.

The compactor will also be sent home when the customer switches from a manual screen to the start up page.

Diverter home – On power up, the diverter will be sent to its last requested position.

The diverter will be sent to trash if a recycle container is full.

The diverter will not move to recycle if the trash photo eye sees material.

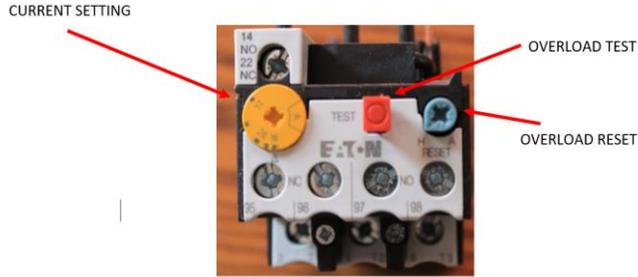
Floor door -- The floor door will not unlock if another floor door is open or trying to open.

It will not unlock if the diverter is moving, the basement control is in manual or an alarm is present that prevents the diverter from moving.

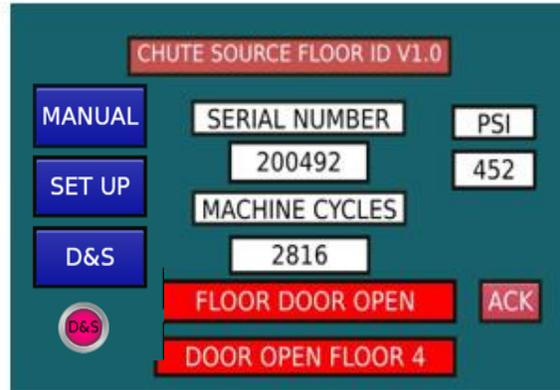
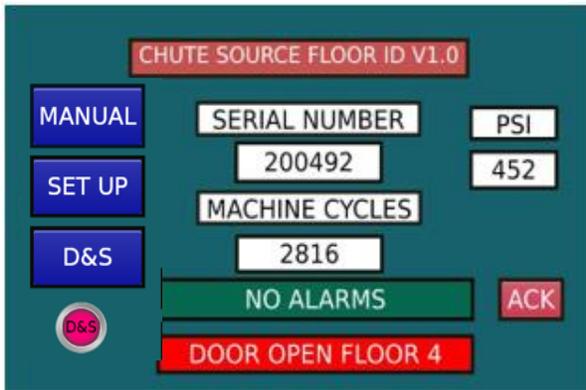
The START UP screen will display 15 alarms that affect the operation of the system. Some alarms require the alarm to be acknowledged. Others will clear automatically. The display will show all active alarms cycling every 3 seconds. (Not just the last alarm.)

ALARMS THAT CLEAR AUTOMATICALLY:

Smoke	The controls have received a signal from an OPTIONAL smoke detector. located in the basement. This will lock the chute doors in the case of a fire.
Heat	The controls have received a signal from an OPTIONAL heat detector. located above the last chute door. This will lock the chute doors in the case of a fire.
Motor Overload	The motor has seen excessive current. Check the incoming fuses to be sure the controls are not being single phased. Check the motor starter for the proper voltage between all three legs at both the incoming and outgoing terminals. Check the current setpoint on the overload relay to make sure it is compactible with the motor full load current.



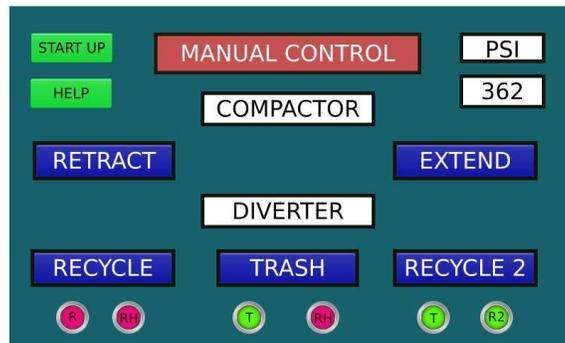
- | | |
|-----------------|--|
| Access Door | Check that the door is completely closed, and the special access key is inserted into the door switch. |
| Transducer | Check the wire coming from the transducer on the side of the manifold to the terminals in the control cabinet. This alarm usually indicates a broken or disconnected connection. |
| Dirty Photo Eye | The compactor trash photo has seen material for more that 30 minutes. The compactor will shutdown for a mandatory 10 minute “cool down”. At the end of “cool down” it will automatically restart. The alarm text will remain on the screen. Clean the photo eye and reflector. Check the alignment of the photo eye. With no trash present the photo should have three lights ON. When it sees trash, only one light will be ON. The alarm display will clear as soon as the photo eye clears, and the system is not in a mandatory “cool down”. |
| Battery | Manually entered setpoints are store in battery backed memory. The BATTERY alarm indicates that the battery is starting to fail. The battery can be replaced without removing power from the control. A dead battery will not destroy the program, only programmable setpoints. |
| Positioning | If the diverter has not reached a selected position in 10 seconds, it creates a positioning alarm. Normally a Bi Sort should reach position in 4 seconds, a Tri Sort in 8 seconds. |
| Oil Temp | The oil temperature has exceeded 185 degrees. This alarm forces a 15 minute cool down. If at the end of the cool down, the temperature still exceeds approximately 170 degrees, a second 15 minute cool down will begin. |
| Floor Door Open | An open floor door will prevent the use of any other floor. The display will indicate the floor number of any open door. If that door remains open for more that 10 seconds, it will also create a Floor Door Open alarm. |
| Emergency Stop | Twist to reset button. |



ALARMS WHICH MUST BE ACKNOWLEDGED

- | | |
|----------------|--|
| Oil Level | Refill with AW 32 oil |
| Trash Full | The container accepting trash needs to be replaced. |
| Recycle Full | The Recycle Photo eye has seen trash for more than 10 seconds.
The recycle container needs to be emptied or replaced. |
| Recycle 2 Full | The Recycle 2 Photo eye has seen trash for more than 10 seconds.
The container needs to be emptied or replaced. |

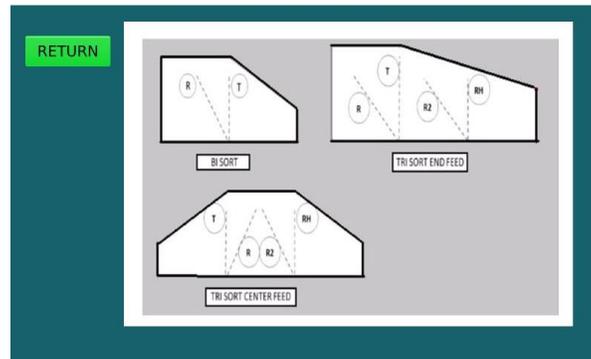
MANUAL CONTROL



Select MANUAL from the START UP screen. The screen appropriate for the type of control will be displayed. If the system includes a compactor, Extend and Retract will allow the ram to be jogged to any position. Releasing the pushbutton will stop travel. Forward motion will automatically be stopped if the system detects high pressure. PSI will display the peak pressure during the manual move.

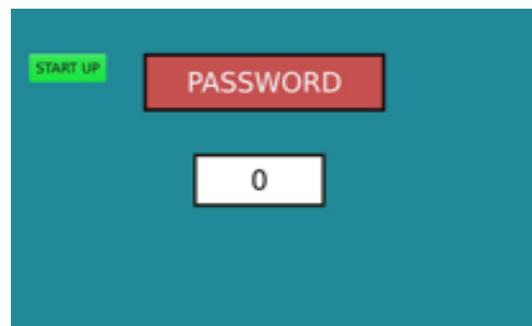
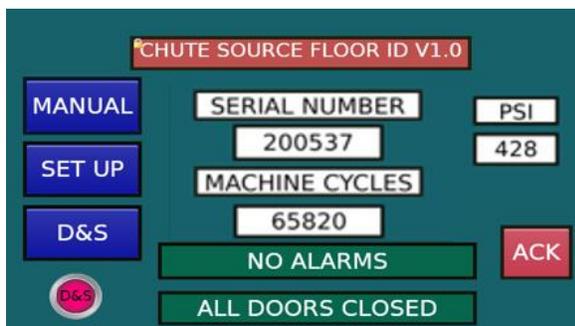
If the system includes a diverter, Recycle, Trash and Recycle 2 will position the diverter. Only a momentary touch of the button is required. The diverter can not be jogged. In position, a BI SORT should only have one limit switch closed. In position, a TRI SORT must have two limit switches closed. A green light indicates a closed switch. The switches are labeled – T, R, R2, RH. Press help for the location of these switches.

HELP

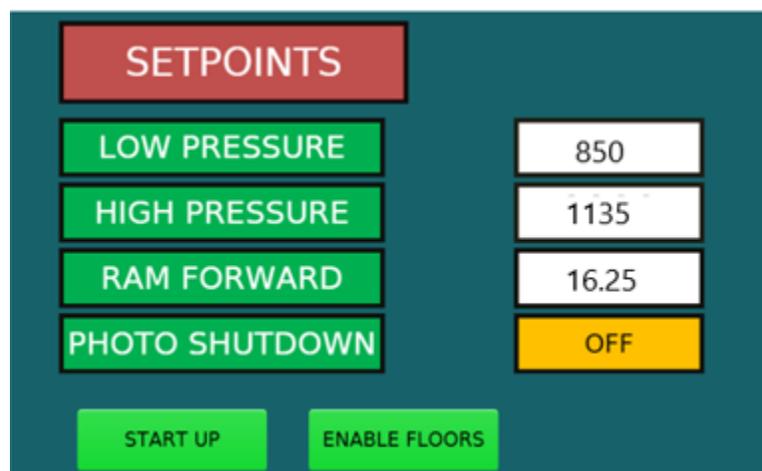


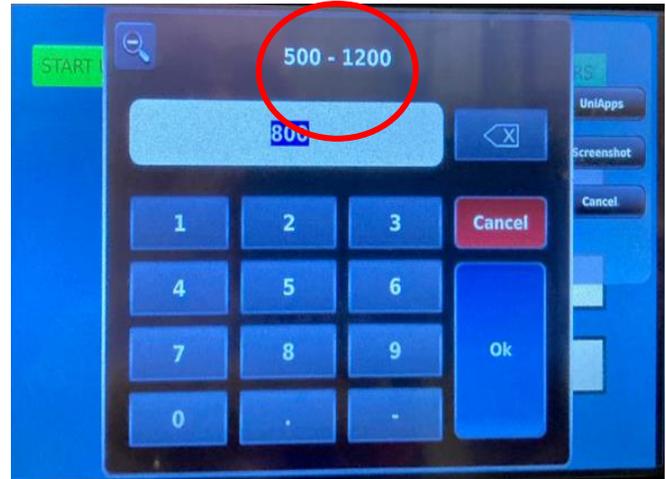
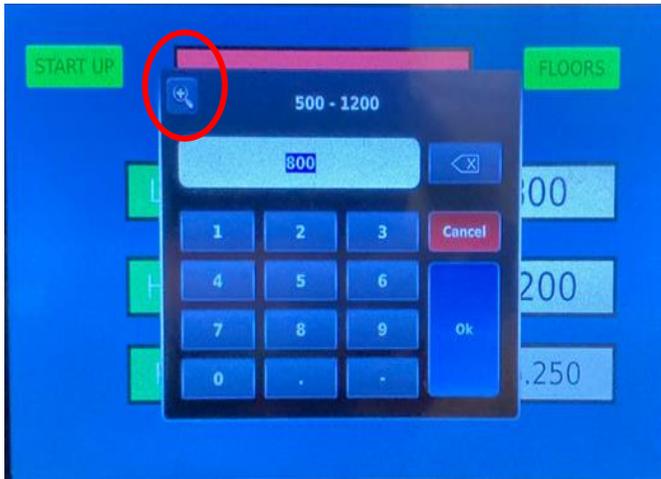
Press RETURN to return to Manual control.

SET UP SCREENS



The SET UP screens are protected by passwords. The first screen allows adjustments to pressures and forward travel time. The password can be obtained from your Chute Source representative. If you reach this screen in error, the Start Up button will return you to the Start Up display. If an incorrect password is entered, nothing will happen, and the incorrect value will remain on the screen. Press the entry field to retry.





In the corner of any numeric display is a + sign. Touching this area will enlarge the numeric keys making it easier to enter values. In the center of the display is the allowable range of values. The above example shows the entry screen for low pressure. Low pressure is adjustable from 500 to 1200 psi.

CUSTOMER SETPOINTS

The Low Pressure setpoint is an early warning that the trash container is approaching capacity. The setpoint limits are 500 to 1200 PSI. The factory default is 800. This setpoint is also used to stop ram retract. The ram travels forward on time and returns on pressure.

The High Pressure setpoints determines the pressure required to fill the trash container. Exceeding this pressure in automatic will stop compaction and display a Trash Full alarm. High Pressure will also stop the ram when manually extending.

Ram Forward is the time in 1/100 of a second that the ram travels forward at the start of auto compaction. If the time is set too short, the compaction will not be maximized. If the time is set too long, the compactor will reach a mechanical stop and a high pressure TRASH FULL alarm will occur. The factor default is 16.250 seconds. The proper adjustment will allow the ram to travel approximately 1 ½" beyond the end of the machine.

PHOTO SHUTDOWN determines how the compactor will react to a blocked photo eye. If the trash photo is continuously blocked for more than 30 minutes, it can mean:

- 1) The photo eye is out of alignment.
- 2) The photo eye or reflector are dirty.
- 3) Trash as bridged in the chute.
- 4) The system is experiencing heavy usage.

If left unattended the compactor could run for hours or days.

OFF – will allow the compactor to run continuously for 30 minutes. The compactor will automatically shutdown for a 10 minute cool down to protect the hydraulic oil from overheating. If the photo is still blocked at the end of the 10 minute cool, the compactor will restart and run for an additional 30 minutes. The compactor is not allowed to run during the cool down period even if the photo eye is cleared. The alarm strobe will flash after the first 30 minute period and the screen will read “CHECK PHOTO EYE”. As soon as the photo eye is cleared during a 30 minute cycle, the shutdown sequence will be aborted, the alarm strobe will turn off, and the error message will clear from the screen. This sequence does not inhibit the operation of the floor doors. (It may be necessary to open a floor door to clear a jam in the chute.)

ON -- will allow the compactor to run continuously for 30 minutes. At the end of 30 minutes both the compactor and the floors will shutdown. The alarm strobe will turn on and the alarm message “CHECK PHOTO EYE” will display. The alarm “ACK” key on the start up screen will clear this alarm and allow the floors to operate. If the trash photo remains blocked, the system will shutdown after another 30 minute period.

	FLOOR	ACTIVE	READS	FAIL
START UP	1	FL1 OFF	0	0
	2	FL2 OFF	0	0
NEXT	3	FL3 OFF	0	0
	4	FL4 OFF	0	0
	5	FL5 ON	2517369	0
	6	FL6 ON	2517369	0
	7	FL7 ON	2517369	0
	8	FL8 ON	2517369	0
	9	FL9 ON	2517369	0
	10	FL10 ON	2517369	0

The software can monitor up to 60 chute doors. The “ENABLE FLOORS” pushbutton allows the operator to define the location and monitor the door at this location. The doors are identified by floor number not door number. This also makes it possible to lock and disable a door.

The screen totals the number of times the system has tried to talk to a floor and the number of times the communication has failed. Power cycling the control resets these numbers. If the read count is increasing, the floor is communicating.

FACTORY SETPOINTS

The screenshot shows the 'FACTORY SETPOINTS' screen. On the left, there are four status indicators: 'COMPACTOR' (green light), 'BI SORT' (green light), 'TRI SORT CF' (pink light), and 'TRI SORT EF' (pink light). On the right, there are two data fields: 'SERIAL NUMBER' with the value '10152020' and 'MACHINE CYCLES' with the value '270'. A 'RESET' button is located to the right of the 'MACHINE CYCLES' field. A 'START UP' button is visible in the top left corner.

The factory setup screen allows selection of the type of control. Does the system have a compactor? If it is a TRI SORT, what type - End Feed or Center Feed? This is also where the number of machine cycles can be reset. If a system failure requires reconfiguring the system from a Tri Sort to a Bi Sort or a BI SORT to a Compactor only, it can be done from this screen by just selecting the desired controls.

This is considered "FACTORY CONTROLLED" therefore the password is only available from Chute Source.

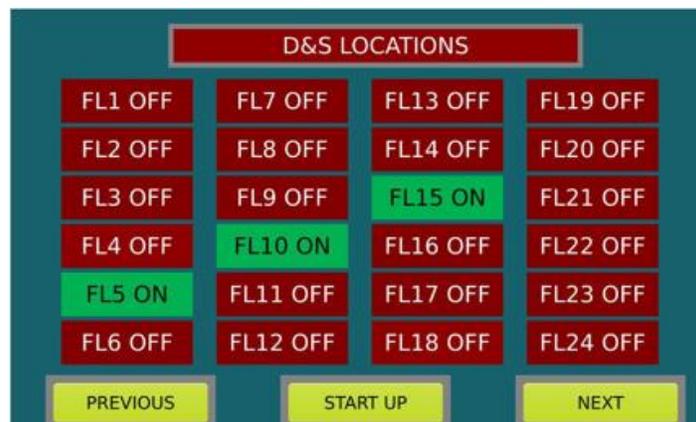
WASHDOWN

A D&S pushbutton on the start up page allows access to the washdown setup screen. This software is included in every Plug and Play recycling system. The D&S units, water valves and access doors must be purchased separately.



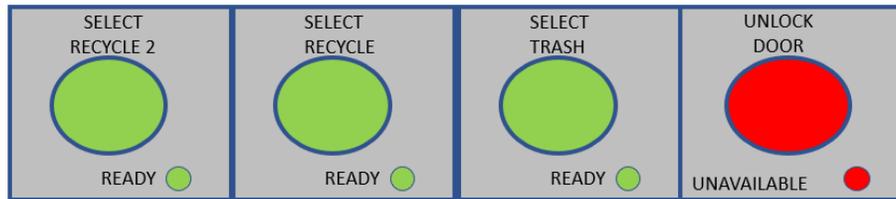
The washdown system allows control from the basement to locations along the chute, designed to wash and disinfect the chute. The control is built into the master control panel, so a separate box does not need to be wired or installed. The wash solenoids connect directly to the floor panels so a MC Cable connection to the basement is not required.

The system allows for an immediate wash, "WASH NOW" or a scheduled wash "TIME WASH" – start at 2:00 in the morning. The system controls the amount of water used. (Wash for 10 Sec).



The system can control a single D&S unit at the top of the chute or multiple units along the chute. In the above example, a fifteen story building has a D&S located at the 15th, 10th, and 5th floor. The more units the more effective the disinfectant.

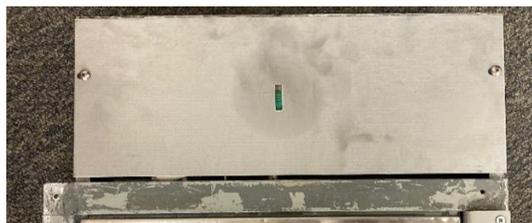
FLOOR PANELS



The system was designed to be a universal controller. Thus, the same software package is used with a Tri- Sort, Bi-sort, Diverter only, Compactor only. The stainless steel trim covers the buttons that do not apply. If necessary, a tri- sorter shipped to a customer can be easily converted to a Bi-Sort or Compactor only in the field.

The small green lights on the face plate, tell the client the position of the recycling diverter. The large red pushbutton is used to unlock the chute door. The small red light indicates the availability of this button. If the red light is on with no buttons pushed it indicates that there is a problem on another floor or the basement. Because the Electrical Interlock specifications allow only one door be open at a time, the Unavailable light could mean there is an open door on another floor. Fire (Heat) or Smoke will lock all doors (Unavailable). If the system is being serviced (Manual, Access door open, Motor overload, Dirty photo eye, Pressure transducer) the doors are locked to protect the operator in the basement. If all the Ready lights are off and the Unavailable light is on, the diverter is moving to a new position. Dropping trash on a diverter in motion could result in damage to the diverter. The diverter move will take between 4 to 8 seconds depending on whether this is a Bi-Sort or Tri-Sort system. Once in position, the appropriate green light will come on and the red Unavailable light will go off.

If the red light comes on while pushing a button to change the diverter selection, it indicates that that selection is not available. As an example, trying to select Recycle when the recycle container is already full. The system will also not allow the diverter to move to RECYCLE if the system is compacting trash. A blocked trash photo eye means the trash is backed up in the chute. Allowing the diverter to move could force the diverter to try to compact material in the chute. Pressing the Recycle or Recycle 2 will light the Unavailable light if trash photo eye is energized.



Doors are shipped with the faceplates reversed. This protects the pushbuttons from shipment damage. The control is mounted to the back of the box making it easier to connect the “Plug and Play” wires. It is not necessary to hold the panel while trying to make the wire connections.

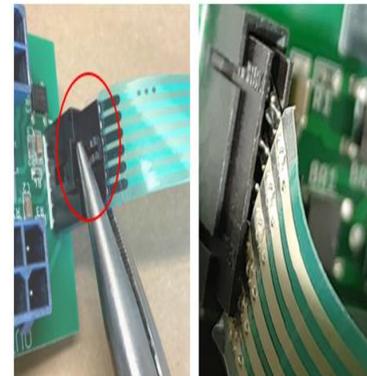




A single MC Cable provides the floor to floor connection. It does not matter whether the system is a BI Sort, TRI Sort or ADA air. The cable includes a 14 gauge, 4 conductor power cable and an ethernet communications cable. For an air operated system, the air supply tubing is also included.



The wiring is straight through. The Ethernet cables plug into the sockets on the control module. It does not matter whether the cable is plugged into the top or bottom socket. The power connector plugs into the circuit board. They can plug into either socket. The sockets are keyed, so it is impossible to make a wiring mistake. Do not hang the face plate from the ribbon cable. If it is necessary to disconnect the cable, *do not pull the ribbon*. This will most likely damage the cable. There is a snap connector on the side of the cable. Depress the tab and pull to release.



SCREEN CALIBRATION

The screen touch points can be recalibrated. The ethernet cable connected to the screen must be disconnected. Touch the upper right corner of the screen and hold until a drop down menu appears.

Select UNIAPPS.

Select Touch Screen

Select Calibrate Screen

Follow the directions on the screen.

To leave

Reconnect the ethernet cable.

Power cycle the controls (wall disconnect not Emergency stop)

The screen will flash trying to connect three times.

BRIGHTNESS CONTROL

The ethernet cable connected to the screen must be disconnected. Touch the upper right corner of the screen and hold until a drop down menu appears.

Select Display

Move the brightness slider bar.

Reconnect the ethernet cable.

Power cycle the controls (wall disconnect not Emergency stop)

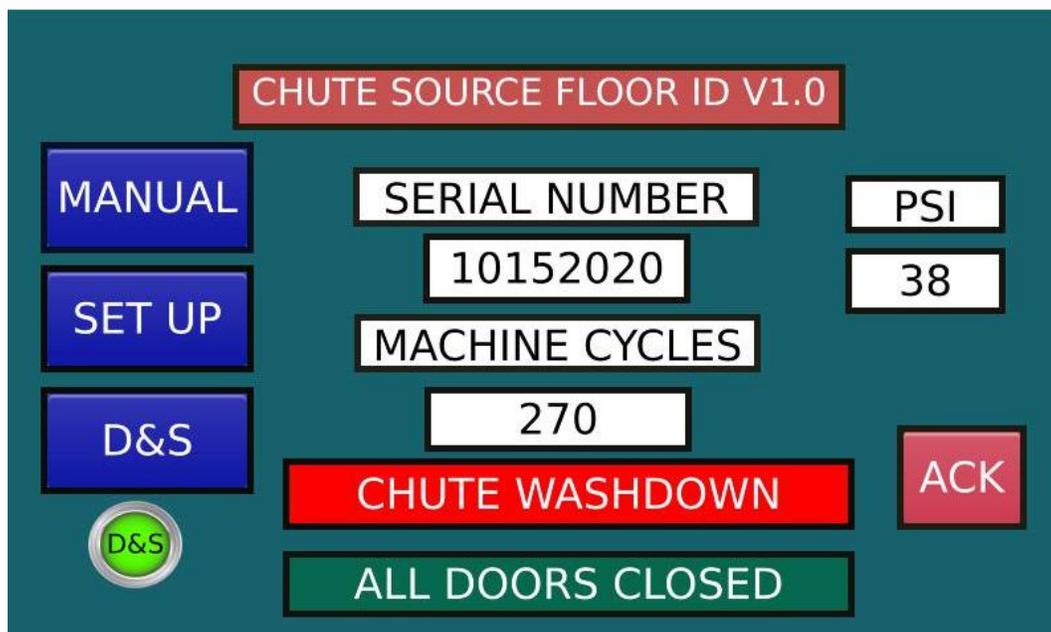
The screen will flash trying to connect three times.

PLUG AND PLAY RECYCLING

OPTIONS

D&S WASHDOWN

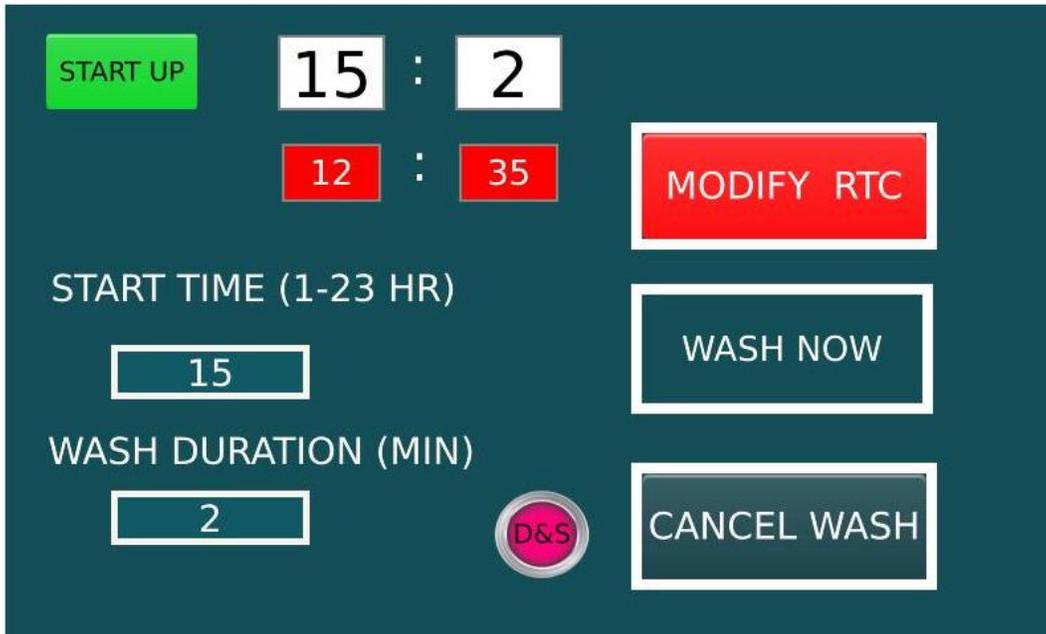
This option controls a sprinkler head at the top of the chute to dispense a spray disinfectant. In tall buildings a second spray head can be in the middle of the building. When this option is included, the START UP screen is modified to allow access to the WASHDOWN SET UP.



A “WASH” start pushbutton is located on the door of the master control cabinet. Pushing this button will activate the wash cycle program.

The D&S light on the screen indicates that a washdown cycle has been activated. If the D&S light is green and the alarm message “CHUTE WASHDOWN” is displayed, cleaning is in progress. During the actual washdown, the floors and compactor are inhibited from operating; the red strobe on the front of the cabinet will flash and the alarm display will read CHUTE WASHDOWN. If only the green D&S light is on, a timed program is in effect, but the cleaning is scheduled to occur later. A red D&S light indicates that no cleaning is scheduled.

A “D&S” pushbutton is located on the screen. This will take the operator to the set up routines.



Three wash selections are available.

WASH NOW

Begin a wash cycle as soon as the “WASH” button on the front of the control cabinet is pushed.

TIME WASH

Once the “WASH” button on the front of the cabinet has been pushed, the green D&S light on the screen will light. The wash, however, will not begin until the hour set on the screen. When the wash begins, the CHUTE WASHDOWN tag will display on the alarm list. Time is entered in military time. Thus, 11:00 PM is 23. Midnight is 0. The wash will not start until all floor doors are closed followed by a 6 second drop time. Once a wash begins the floor doors are locked.

TIME REPEAT

TIME REPEAT operates the same as TIME WASH but will automatically repeat each day at the selected time.

Pressing the WASH SELECTION button will cycle through these selections.

All wash cycles require the “WASH” button of the front of the control cabinet to be pushed. All cycles can be aborted by pressing the CANCEL WASH button on this page. WASH NOW and TIME WASH automatically reset at the end of their cycle. TIME REPEAT requires CANCEL WASH to reset. A red “D&S” light confirms that all wash cycles have been terminated.

WASH DURATION controls the amount of disinfectant being used to clean the chute. The time is programmed in minutes. The default time is 1 minute.

E-MAIL



An E-Mail interface can be added to the control. This feature requires a hardwired Ethernet connection to the building router. This does not require a dedicated IP address. In the event of a control failure that would affect the operation of the compactor/diverter or the floor panels, an e-mail message can be sent to maintenance. The E-MAIL will list the type of fault and the building location. The message can be sent to multiple locations. It is recommended the client establish a building E-Mail address so that in the event of a change in personnel, the software does not have to be modified.

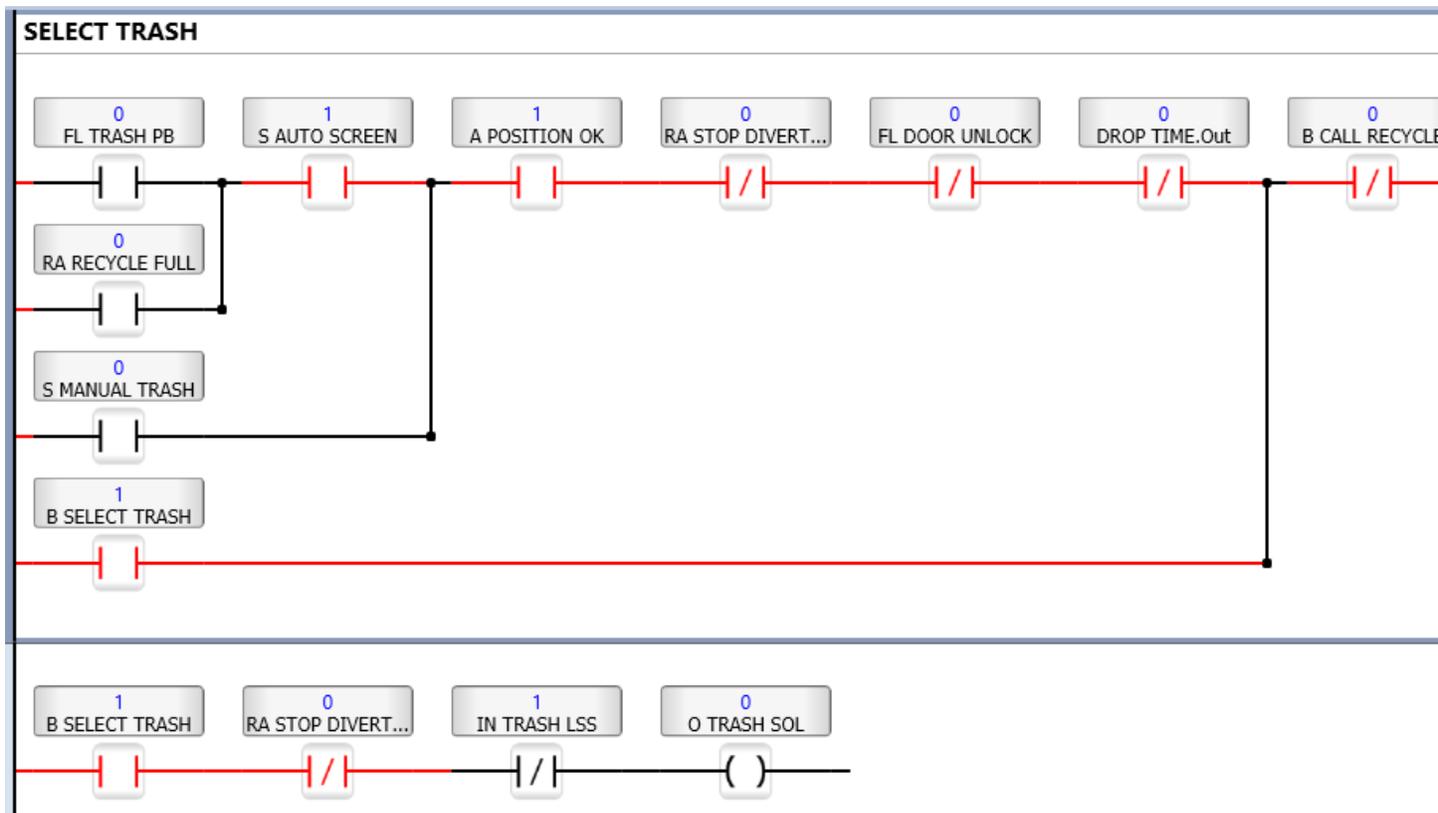
There is a charge to setup or make changes to the E-mail programs but no monthly monitoring fee.

Messages:

Heat Alarm	Heat has been detected in the chute at the last floor door.
Smoke Alarm	Smoke has been detected at the main control panel.
Motor Overload	Motor overload has seen excessive current.
Access Door	The door on the side of the diverter as been open more than 10 minutes.
Oil Level	Refill with AW32 oil
Oil Temp	Oil has exceeded 185 degrees. System will shut down for 15 minutes.
Trash Full	Trash container needs to be emptied. This will shut the entire system down.

Transducer	System is unable to read pressure. This will shut the entire system down.
Check Trash Photo	System has run continuously for 30 minutes.
PLC Battery	Low battery needs to be replaced. Excocted life 5 years.
Recycle Full	Empty container. Trash and Recycle 2 are still available.
Recycle 2 Full	Empty container. Trash and Recycle are still available.
Floor Door open	A floor door has been open more than 10 minutes.
Positioning	The diverter has not reached position in 1 minute. Check limit switches.
Emergency Stop	Button has been depressed more than 10 minutes.

THE 600 MILE PROGRAMMING CABLE



The E-Mail interface is bi-directional. It allows a direct connection to the factory. It serves as an extension for the programming cable. The factory can then monitor or make changes to software at the customer's location. Service or program changes become quick and easy.

This service is automatically included when the client selects the E-Mail option.

OTHER OPTIONS

Heat alarm – connected at the top of the chute.

Smoke alarm – connects to the master control panel.

Key lock out Emergency Stop pushbutton

Magnetic A door release