

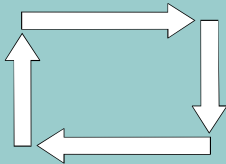


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Operator Guide—

Drynet Dryer/Shuttle Controller



**Read the
separate
safety
manual
before
installing,
operating,
or servicing**

Applicable Milnor® products by model number:

50040CS1	50040SA1	50040SB1	50040TG1	50040TS1	50040TT1	58040CS1
58040CT1	58040SA1	58040SB1	58040TG2	58040TS1	58040TT1	58058CS1
58058CT1	58058RS1	58058SA1	58058SB1	58058TG2	58058TS1	58058TT1
58080CS1	58080CT1	58080SA1	58080TG1	58080TS1	58080TT1	64058TG1
6458ATG1	6458TG1L	6458TG1R	6458TS1L	6458TS1R	72072TG1	7272TG1L
7272TG1R	CTLDRSPC					

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Chapter 1

Controls

BIVUUO01 (Published) Book specs- Dates: 20080722 / 20080722 / 20080722 Lang: ENG01 Applic: PDU YDS

1.1. Controls on Shuttles Including Those in a DryNet Network

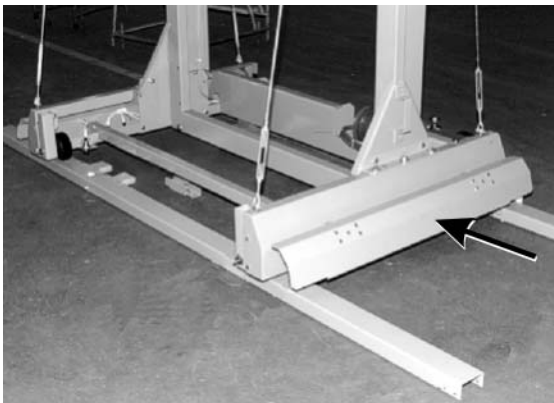
This document describes the physical controls provided with the various shuttle models as well as a few DryNet operating functions which serve in place of physical controls when the shuttle is part of a DryNet (Dryer/Shuttle Controller) network. The shuttle will have only those controls needed for the type of movements it can perform. Certain controls are always located on the shuttle itself. Generally, on shuttles that traverse a rail, the manual operation controls are located on the free-standing shuttle control box, while on shuttles that do not traverse, they are on the shuttle itself. If the shuttle is part of a DryNet network, certain physical controls are located at the DryNet Console. This is also where machine functions are available via the DryNet software.

1.1.1. Machine-mounted Controls

These include one or more emergency stop switches as described in [Section 1.2.1.1 “Emergency Stop Switch \(locking push button\)”](#) and the other controls described under this section.

- 1.1.1.1. **Emergency Stop Kick Plates**—Shuttles are provided with hinged kick plates ([Figure 1](#)) on both sides of the machine in the traversing directions. When a kick plate pivots sufficiently, this actuates a switch that stops the machine by dropping out the three-wire circuit.

Figure 1: Shuttle Kick Plate



- 1.1.1.2. **Motor Disconnect Switch**—This switch (SHMD) affects three-phase power for the shuttle motors, as follows:

0 OFF—Three-phase power is not available. The shuttle will not move under power.

1 ON —Three-phase power is available. **The machine may immediately begin moving.**

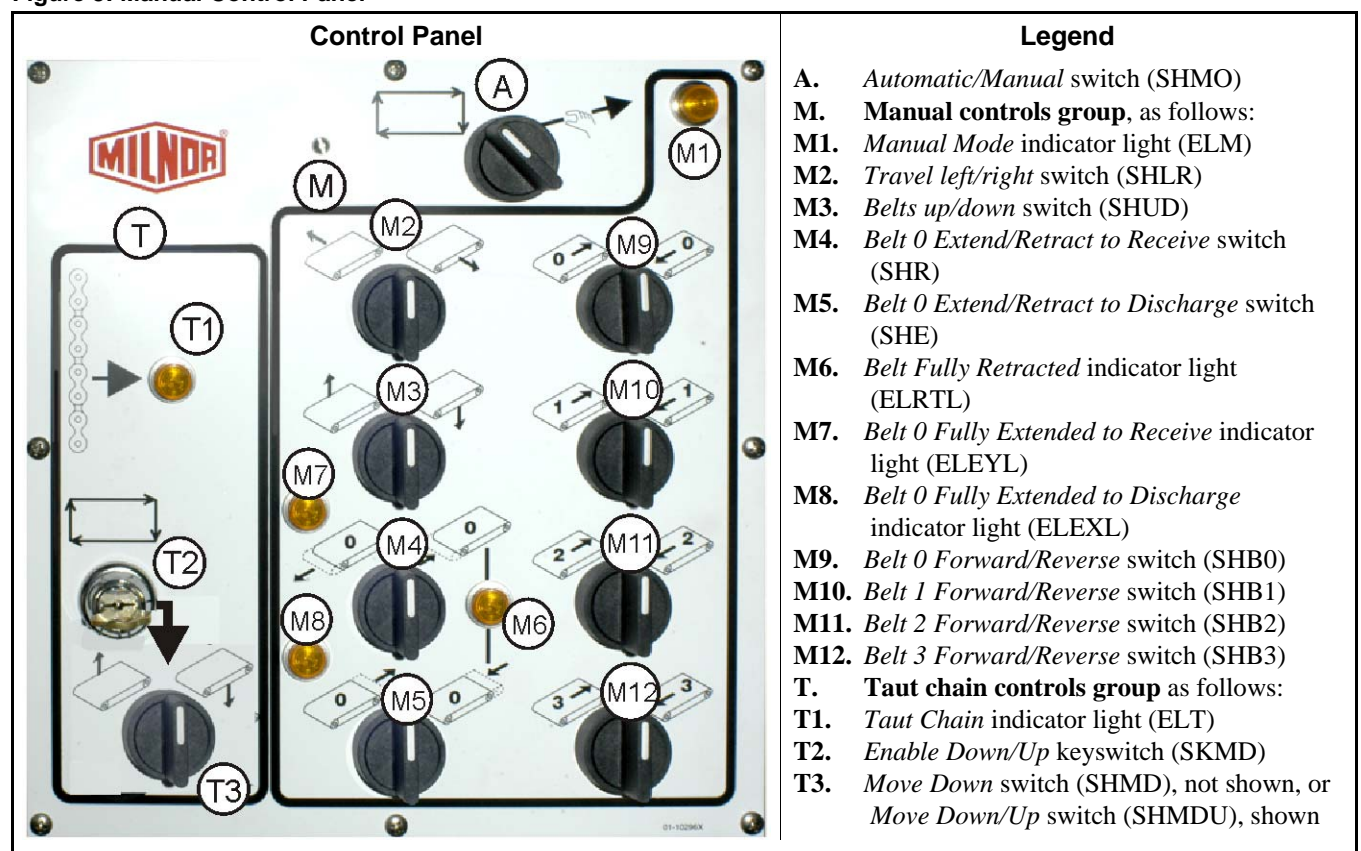
Figure 2: Motor Disconnect Switch



1.1.2. Manual Operation Controls

Figure 3 illustrates the control panel used on shuttles for cakes and loose goods. Only those controls corresponding to the shuttle's motion capability are provided on a given shuttle.

Figure 3: Manual Control Panel













1.1.2.1. **Automatic/Manual switch (A)**—This switch (SHMO) determines what controls machine movement, as follows:

—The machine is controlled by the switches in the manual controls group.

—The machine moves under automatic control. **The machine may immediately begin moving.**

1.1.2.2. Manual Controls Group (M)

- 1.1.2.2.1. **Manual Mode indicator light (M1)**—The *Manual Mode* indicator light (ELM) illuminates when manual mode is enabled, indicating that the manual control switches are active.
- 1.1.2.2.2. **Travel left/right switch (M2)**—Holding this center-off switch (SHLR) in one of the momentary positions causes the shuttle to traverse the rail, as follows:
- —(momentary counter-clockwise) The shuttle moves left along the rail, relative to the flow of goods.
 - —(momentary clockwise) The shuttle moves right along the rail.
- 1.1.2.2.3. **Belts up/down switch (M3)**—Holding this center-off switch (SHUD) in one of the momentary positions causes the bed(s) to move as follows:
- —(momentary counter-clockwise) The hoist runs and the bed(s) rise.
 - —(momentary clockwise) The hoist runs and the bed(s) descend.
- 1.1.2.2.4. **Belt 0 Extend/Retract to Receive switch (M4)**—Holding this center-off switch (SHR) in one of the momentary positions causes the belt 0 (topmost) bed to move as follows in conjunction with receiving a load:
- —(momentary counter-clockwise) The bed extends toward the device it will receive the goods from.
 - —(momentary clockwise) The belt retracts from the receive position.
- 1.1.2.2.5. **Belt 0 Extend/Retract to Discharge switch (M5)**—Holding this center-off switch (SHE) in one of the momentary positions causes the belt 0 (topmost) bed to move as follows in conjunction with discharging a load:
- —(momentary counter-clockwise) The bed extends toward the device it will discharge the goods to.
 - —(momentary clockwise) The belt retracts from the discharge position.
- 1.1.2.2.6. **Belt Fully Retracted indicator light (M6)**—This light (ELRTL) illuminates when the Belt 0 (topmost) bed is fully retracted, indicating that the shuttle can traverse safely.
- 1.1.2.2.7. **Belt 0 Fully Extended to Receive indicator light (M7)**—This light (ELEYL) illuminates when the Belt 0 (topmost) bed is fully extended to receive a load from another device.
- 1.1.2.2.8. **Belt 0 Fully Extended to Discharge indicator light (M8)**—This light (ELEXL) illuminates when the Belt 0 (topmost) bed is fully extended to discharge a load to another device.
- 1.1.2.2.9. **Belt [0-3] Forward/Reverse switch (M9 through M12)**—Holding this center-off switch (SHB0) in one of the momentary positions causes the selected belt to run as follows:
- —(momentary counter-clockwise) The selected belt runs forward, toward the device which normally receives goods from the belt.
 - —(momentary clockwise) The selected belt runs in reverse, toward the device which normally discharges goods to the belt.

1.1.2.3. Taut Chain Recovery Controls (T)

Supplement 1

About Taut Chain Conditions

From the standpoint of the type of hoist, shuttles fall into three categories:

top-mounted hoist motor—This shuttle type has a hoist motor that is rigidly mounted to the top frame member. The hoist motor drives a roller chain with one free end. This type is susceptible to the taut chain condition that occurs if the controller does not sense the topmost position when the bed is rising, causing it to reach its upper mechanical limit.

side-mounted hoist motor (low clearance shuttle)—This type uses a hoist motor reducer that is rigidly mounted near the top of a side frame member. The hoist motor drives a roller chain that forms a loop and connects to the bed assembly both above and below. This type is susceptible to the same condition as above and the condition that occurs if the controller does not sense the bottom-most position when the bed is descending, causing it to reach its lower mechanical limit.



CAUTION 1: Risk of damage—Forcing the bed assembly against a mechanical stop by improper use of the taut chain or other manual controls may cause shuttle components to bend or break, or the hoist motor to burn out.


- Ensure that you do not hold a control in a direction the bed assembly cannot move.


Demag hoist (light frame shuttle)—This type uses a Demag brand hoist suspended from the top frame member that drives an anchor chain. This type is not susceptible to the taut chain condition.

These controls function with all except shuttles that use the Demag hoist.


1.1.2.3.1. **Taut Chain indicator light (T1)**—This light (ELT) illuminates to indicate that a taut chain error has occurred.

1.1.2.3.2. **Enable Up/Down keyswitch (T2)**—This keyswitch (SKMD) determines what controls vertical movement of the shuttle bed(s), as follows:

—The bed(s) can be manually lowered with the *Move Down* switch or manually lowered or raised with the *Move Down/Up* switch, whichever is provided.

—Shuttle movements are controlled automatically.

1.1.2.3.3. **Move Down switch or Move Down/Up switch (T3)**—If armed as described in [Section 1.1.2.3.2](#), the counter-clockwise-off, *Move Down* switch (SHMD) provided on shuttles with a top-mounted hoist motor, or the center-off, *Move Down/Up* switch (SHMDU) provided on shuttles with a side-mounted hoist motor, causes the hoist to move as follows:

—(momentary clockwise) The bed(s) descend while this position is held.

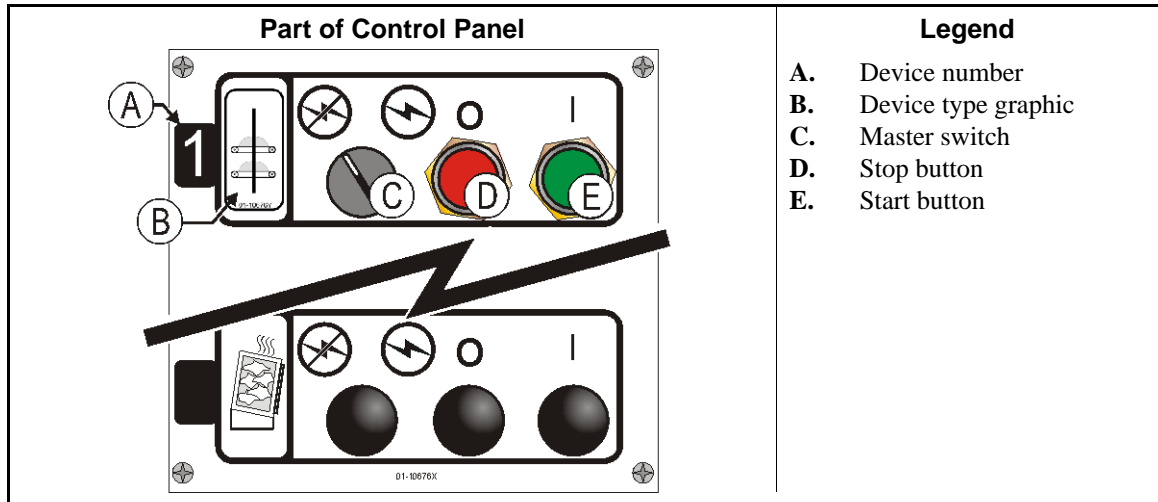
Note 1: Older models use a *Move Down* button. The bed(s) descend while this button is held.

—(momentary counter-clockwise, if provided) The bed(s) rise while this position is held.

1.1.3. Controls on the Dryer/Shuttle Controller (DryNet) Console

In normal operation, the shuttle, along with all other machines in the DryNet network are individually powered on and off at this location. Shuttles that are not part of a DryNet network will have corresponding controls mounted on the shuttle itself, or the free-standing shuttle control box.

Figure 4: DryNet-mounted Controls



1.1.3.1. **Master Switch (C)**—The *Master switch* controls single-phase control circuit power to the machine and the DC power supply for the microprocessor and its components, as follows:

- ⊕—The circuit is energized, permitting operation.
- ⊗—The circuit is de-energized, stopping or preventing operation.

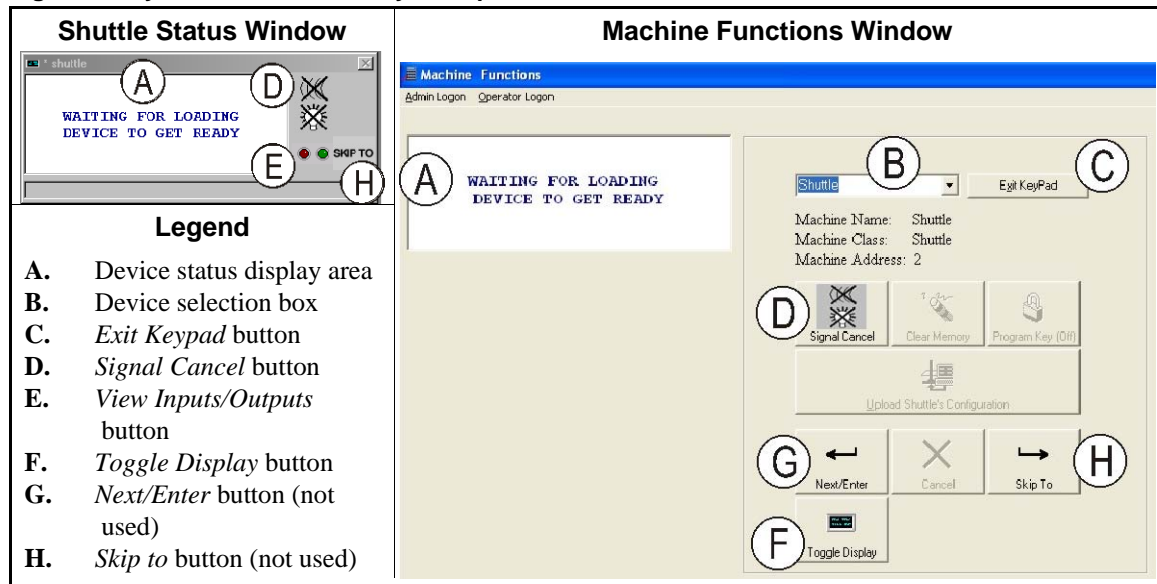
1.1.3.2. **Stop Button (D)**—Pressing this button stops the machine immediately by opening the three-wire circuit. The Emergency Stop button performs the same function.

1.1.3.3. **Start Button (E)**—Pressing this button enables machine operation if all safety considerations are met. When operation is enabled, the machine will operate in manual or automatic mode.

1.1.4. Shuttle Machine Functions Available to the Operator on DryNet

During normal operation, the DryNet CRT will display a small *Device Status* window for every machine (dryer and shuttle) on the DryNet network. If you click on the window itself, this displays the *Machine Functions* window for the selected machine. Both windows contain buttons available to the operator. Some buttons are repeated on both windows. Only certain buttons are available depending on whether and how the user is logged in to the system. Click a button with the mouse to actuate the function. These windows and buttons are shown in [Figure 5](#) and explained below.

Figure 5: DryNet Windows Used by the Operator



- 1.1.4.1. **Device status display (A)**—The controller uses this area to display messages relevant to the active device selected according to [Section 1.1.4.2](#).
- 1.1.4.2. **Device selection box (B)**—Click the mouse on the arrowhead at the right end of this box to see a list of all devices controlled by this Dryer/Shuttle controller. Click on one of the devices in the list to make it the active device.
- 1.1.4.3. **Exit Keypad button (C)**—Click the mouse on this button to return to the machine display screen to monitor all devices.
- 1.1.4.4. **Signal Cancel button (D)**—If an error caused the operator signal (flashing lights and/or audible buzzer), click on this button to silence the operator signal. If the signal began when a valid formula was selected, the signal will end automatically when the formula is started.
- 1.1.4.5. **View Inputs/Outputs button (E)**—Click this button to display the *Dryer I/O* window, which shows the on/off status of each microprocessor input and output for the selected machine.
- 1.1.4.6. **Toggle Display button (F)**—For use by service personnel. Click this button repeatedly to toggle through various displays on the Shuttle Status window. These displays show cake information, inputs, outputs, counting horizontal targets as the shuttle traverses the rail, and counting vertical targets as the shuttle bed(s) elevate and descend.

— End of BIVUU001 —

BIPDGT01 (Published) Book specs- Dates: 20080722 / 20080722 / 20080722 Lang: ENG01 Applic: PDU YDS

1.2. Controls on Dryers, Conditioners, and Shakers Including Those in a DryNet Network

This document describes the physical controls provided with dryers, conditioners, and shakers as well as a few DryNet operating functions which serve in place of physical controls when the machine is part of a DryNet (Dryer/Shuttle Controller) network. The physical controls include manual intervention controls and status lights mounted on the machine, and power controls

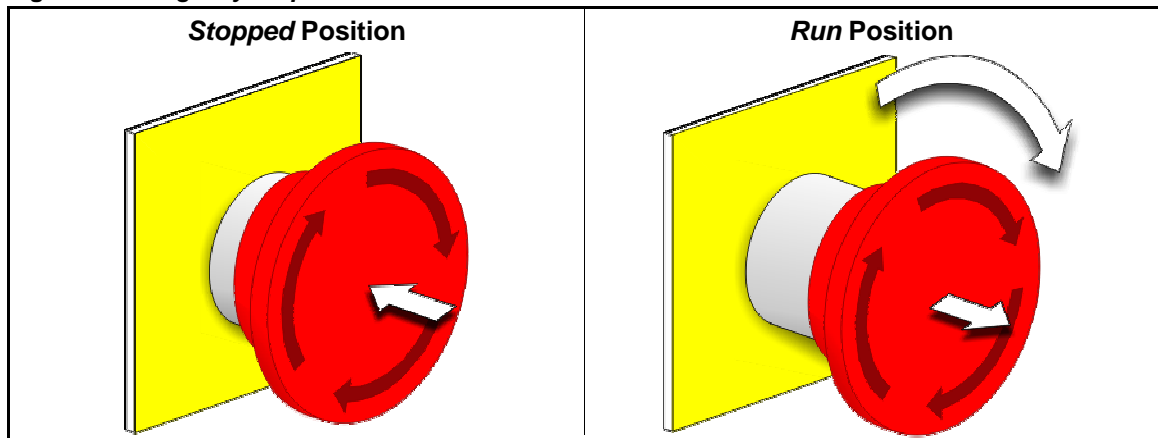
mounted on the DryNet console or other remote-mounted electric box. Drynet operating functions are performed at the DryNet console.

1.2.1. Machine-mounted Controls

Controls mounted on the machine include one or more emergency stop switches and the controls necessary to manually unload the dryer (Figure 7).

- 1.2.1.1. **Emergency Stop Switch (locking push button)** [Document BIVUU002]—One or more *emergency stop* switches (Figure 6) are provided on the device. When pressed, any emergency stop switch removes power from the machine controls, stops the machine and locks in the depressed (switch actuated, machine stopped) position. When safe to do so, turn the button clockwise to unlock the switch. To resume operation, perform the device's normal startup procedure.

Figure 6: *Emergency Stop Switch*



Notice 2: Press the *emergency stop* switch immediately in an emergency situation. This disables the 3-wire circuit while maintaining power to the microprocessor controller.

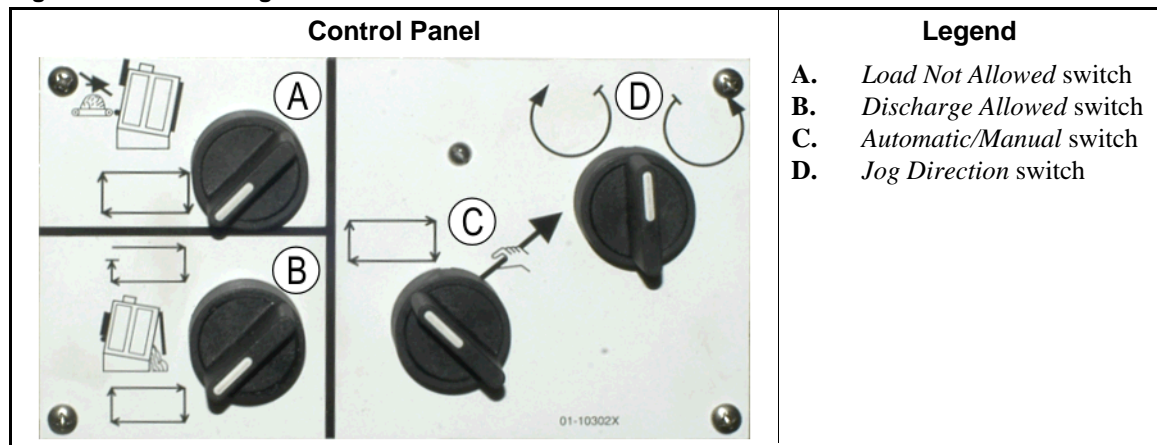
Display or Action

Explanation

- ⊙ This symbol represents the emergency stop switch in Milnor® documents other than electrical wiring diagrams.

1.2.1.2. Door and Jog Controls

Figure 7: Door and Jog Controls



1.2.1.2.1. **Load Not Allowed switch (A)**—This switch determines whether the machine will request (accept) a new load automatically, as follows:

—The machine will not request a load.

—The machine will request a new load after discharging the current load (required for normal, automatic operation).

1.2.1.2.2. **Discharge Allowed switch (B)** —This switch determines how the machine will discharge, as follows:

—The machine automatically discharges each load when the dry code is finished, without regard for the ready status of the receiving device. For example, if a cart is supposed to be in position, but it is not, the goods will discharge onto the floor.

—This position prevents the machine from discharging unless it receives a signal from the Miltrac™ controller to discharge. Hence, this position has two uses: 1) It is required for normal operation if the machine is unloaded via Miltrac, and 2) it may be used to prevent automatic discharge if the machine is not unloaded via Miltrac.

—If the machine is ready to discharge, turning the switch to this momentary position briefly will initiate the discharge process.

1.2.1.2.3. **Automatic/Manual Rotation switch (C)**—This switch determines what controls basket rotation, as follows:

—Automatic operation is suspended, the discharge door opens and basket rotation is controlled by the *Jog Direction* switch.

—The basket rotates automatically.

1.2.1.2.4. **Jog Direction switch (D)**—Used for unloading. When rotation is set to manual, this center-off switch causes the basket to rotate as follows, except as explained in [Note 2](#):

—(momentary, clockwise) rotates the basket clockwise (when viewing the machine from the front) while the switch is held.

—(momentary, counter-clockwise) rotates the basket counterclockwise while the switch is held.

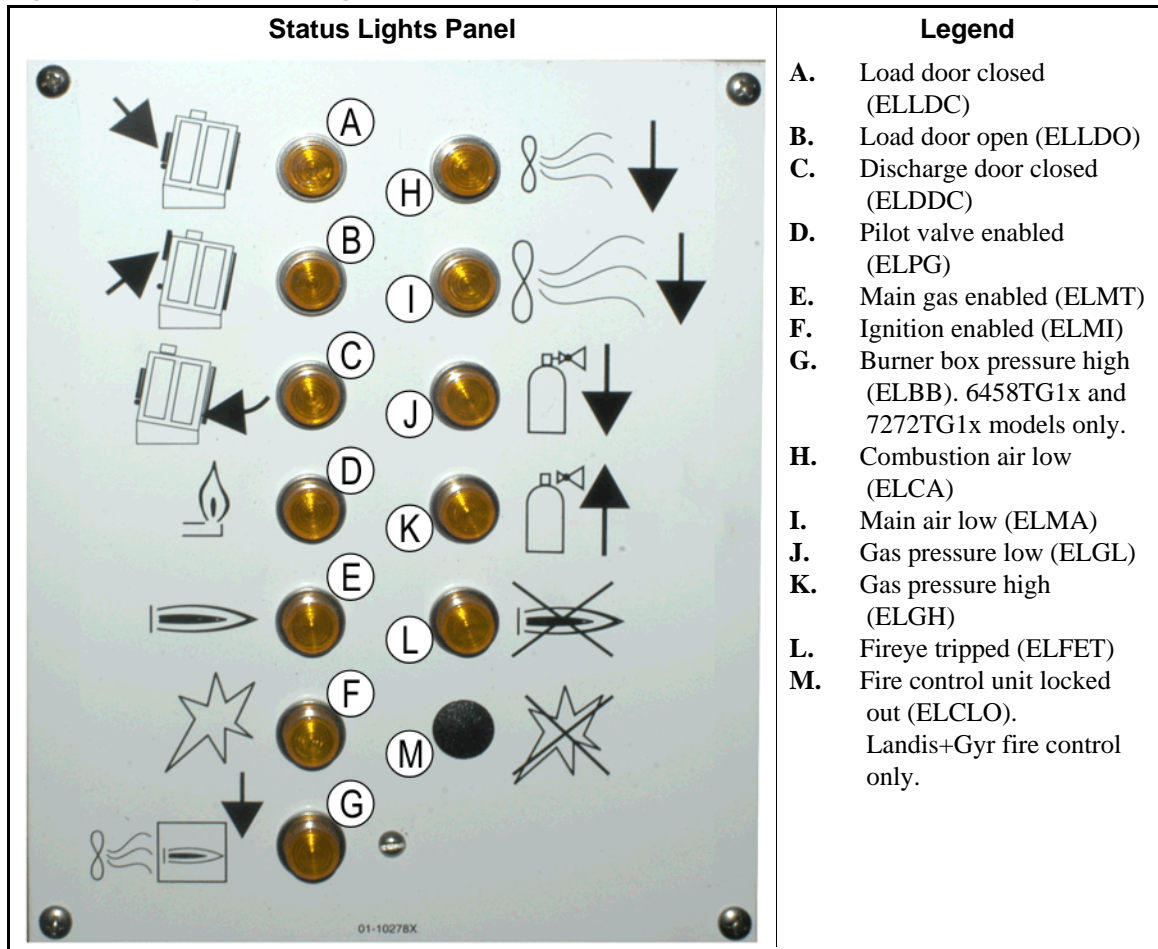
Note 2: 6458Txxx and 7244Txxx models can have blowers either on the left or the right. Machines with lefthand blowers function exactly as stated above. Those with righthand blowers function opposite that

stated above. For example, holding the switch at the clockwise position will cause the basket to rotate counter-clockwise when viewed from the front of the machine. This is the direction the basket turns during automatic unloading, to help prevent plastering of the goods.

1.2.2. Machine-mounted Status Lights—Gas Dryers

Gas-fired dryers have several amber status lights on the front panel used to monitor the dryer doors and heating system. Some of these lights are operated by the machine controller and some are operated by the fire control unit (Fireye® or Landis+Gyr). When an error condition causes a light to either illuminate or extinguish, an error message is displayed. For lights operated by the fire control unit, the error message will say “CHECK ERROR LIGHTS.”

Figure 8: Gas Dryer Status Lights



1.2.2.1. Load Door Closed (A)—This light (ELLDC) indicates that the load door is fully closed. If the load door is not fully closed 15 seconds after the dryer receives the *Loaded* signal, the *Load Door Open* message is displayed.

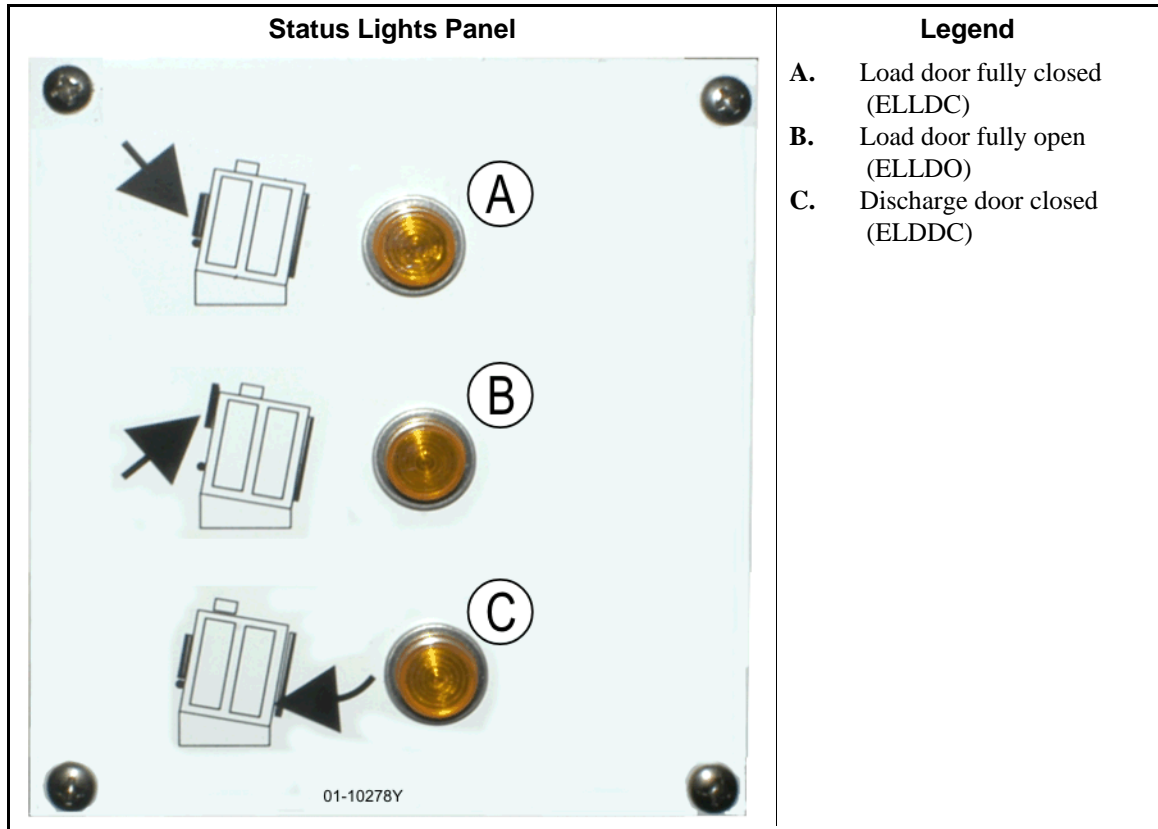
1.2.2.2. Load Door Open (B)—This light (ELLDO) indicates that the load door is fully open. If the load door does not open fully within 15 seconds of the “open load door” command from the microprocessor, *Load Door Not Open* is displayed.

- 1.2.2.3. Discharge Door Closed (C)**—This light (ELDDC) indicates that the discharge door is completely closed. If the controller does not detect the discharge door closed, it will permit the load door to open for loading, but it will not signal the loading device to begin loading and the message *Discharge Door Open* will be displayed.
- 1.2.2.4. Pilot Valve Enabled (D)**—This light (ELPG) indicates that the flame control unit has energized the pilot valve.
- 1.2.2.5. Main Gas Enabled (E)**—This light (ELMT) indicates that the flame control unit has energized the modulating gas valve and the main gas valve.
- 1.2.2.6. Ignition Enabled (F)**—This light (ELMI) indicates that the flame control unit is attempting to ignite the flame.
- 1.2.2.7. Burner Box Pressure High (G)**—This light (ELBB) indicates that the permissible burner box pressure has been exceeded. This is an error condition.
- 1.2.2.8. Combustion Air Low (H)**—This light (ELCA) indicates that combustion air flow delivered to the dryer is too low for proper operation.
- 1.2.2.9. Main Air Low (I)**—This light (ELMA) indicates that main air flow delivered to the dryer is too low for proper operation.
- 1.2.2.10. Gas Pressure Low (J)**—This light (ELGL) indicates that the gas pressure delivered to the dryer is too low for proper operation, or the gas regulator is damaged.
- 1.2.2.11. Gas Pressure High (K)**—This light (ELGH) indicates that the gas pressure delivered to the dryer is too high for proper operation, or the gas regulator is damaged.
- 1.2.2.12. Fireye Tripped (L)**—If the machine is equipped with a Fireye fire control unit, this light (ELFET) indicates that the flame rod signaled the flame control unit that neither the pilot nor the burner is lit.
- This light is sometimes provided when the machine is equipped with a Landis & Gyr fire control unit. If so, it has the same meaning as the *Fire Controller Locked Out* status light below.
- 1.2.2.13. Fire Controller Locked Out (M)**—If the machine is equipped with a Landis+Gyr fire control unit, this light (ELCLO) indicates that the microprocessor requested fire, but the flame control unit was disabled because one of the conditions required by the safety reset circuit was not satisfied.

1.2.3. Machine-mounted Status Lights—Steam and Thermal Oil Dryers and Conditioners and All Shakers

Dryers and conditioners heated by steam or thermal oil, as well as all shakers (non-heated units) have three amber status lights on the front panel to monitor the doors.

Figure 9: Steam Dryer Status Lights



1.2.3.1. **Load Door Closed**—This light indicates that the load door is fully closed. If the load door is not fully closed 15 seconds after the dryer receives the *Loaded* signal, the *Load Door Open* message is displayed.

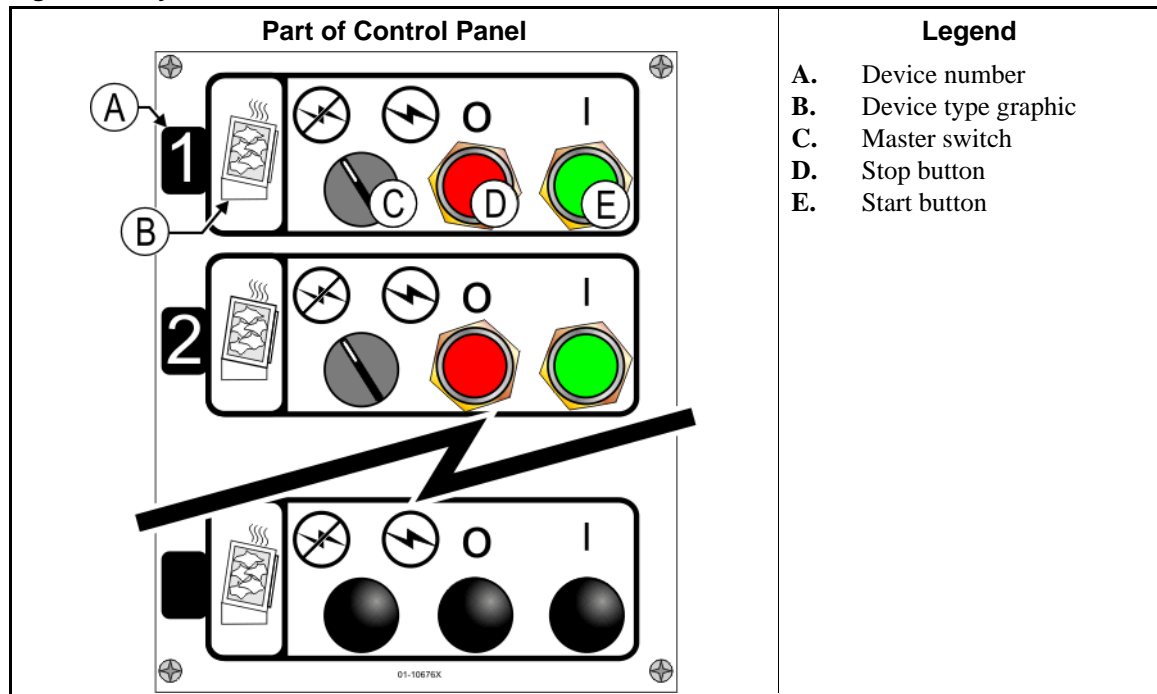
1.2.3.2. **Load Door Open**—This light indicates that the load door is fully open. If the load door does not open fully within 15 seconds of the “open load door” command from the microprocessor, *Load Door Not Open* is displayed.

1.2.3.3. **Discharge Door Closed**—This light indicates that the discharge door is completely closed. If the controller does not detect the discharge door closed, it will permit the load door to open for loading, but it will not signal the loading device to begin loading and the message *Discharge Door Open* will be displayed.

1.2.4. **Controls Mounted on the Dryer-Shuttle Controller (DryNet) Console**

In normal operation, all machines in the DryNet network are individually powered on and off at this location. On machines that are not part of a DryNet network, corresponding controls are mounted on a separate dryer control box.

Figure 10: Drynet-mounted Controls



1.2.4.1. Master Switch (C)—The *Master switch* controls single-phase control circuit power to the machine and the DC power supply for the microprocessor and its components, as follows:

- ⊕—The circuit is energized, permitting operation.
- ⊗—The circuit is de-energized, stopping or preventing operation.

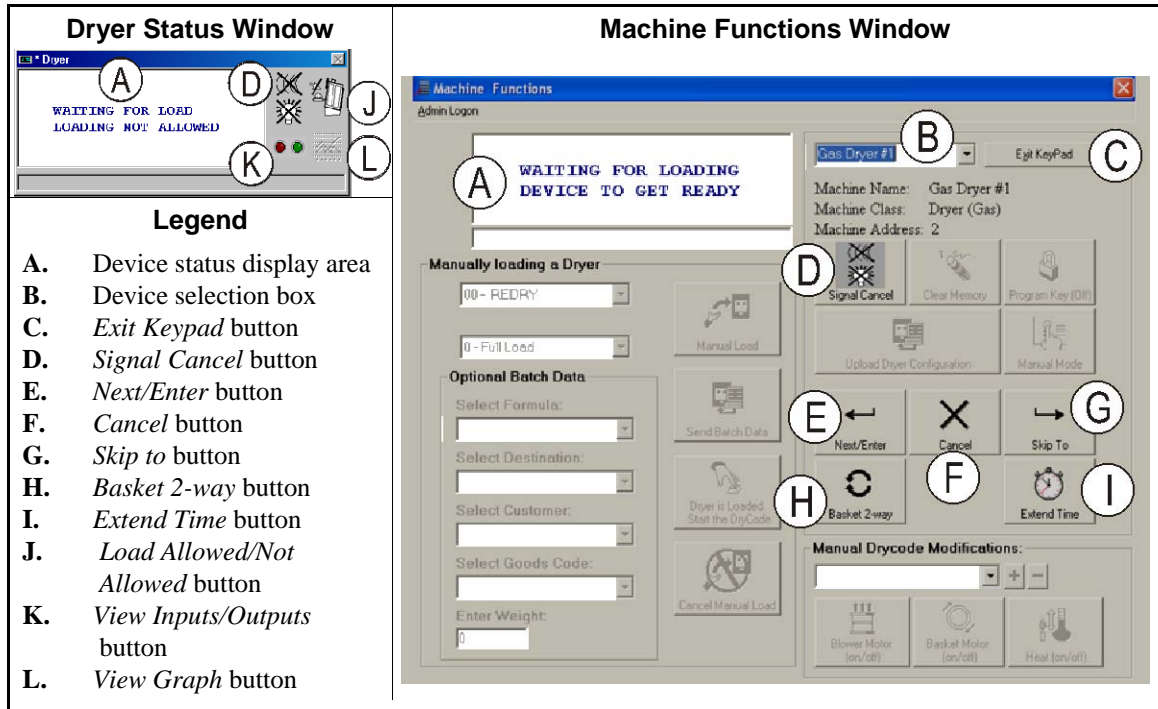
1.2.4.2. Stop Button (D)—Pressing this button stops the machine immediately by opening the three-wire circuit. The Emergency Stop button performs the same function.

1.2.4.3. Start Button (E)—Pressing this button enables machine operation if all safety considerations are met. When operation is enabled, the machine will operate in manual or automatic mode.

1.2.5. Machine Functions Available to the Operator on DryNet

During normal operation, the DryNet CRT will display a small *Device Status* window for every machine (dryer and shuttle) on the DryNet network. If you click on the window itself, this displays the *Machine Functions* window for the selected machine. Both windows contain buttons available to the operator. Some buttons are repeated on both windows. Only certain buttons are available depending on whether and how the user is logged in to the system. Click a button with the mouse to actuate the function. These windows and buttons are shown in [Figure 11](#) and explained below.

Figure 11: DryNet Windows Used by the Operator



1.2.5.1. **Device status display (A)**—The controller uses this area to display messages relevant to the active device selected according to [Section 1.2.5.2](#).

1.2.5.2. **Device selection box (B)**—Click the mouse on the arrowhead at the right end of this box to see a list of all devices controlled by this Dryer/Shuttle controller. Click on one of the devices in the list to make it the active device.

1.2.5.3. **Exit Keypad button (C)**—Click the mouse on this button to return to the machine display screen to monitor all devices.

1.2.5.4. **Signal Cancel button (D)**—If an error caused the operator signal (flashing lights and/or audible buzzer), click on this button to silence the signal. If the signal began when a valid formula was selected, the signal will end automatically when the formula is started.

1.2.5.5. **Next/Enter button (E)**—This button is enabled only when an administrator or an operator is logged in at the controller.

1.2.5.6. **Cancel button (F)**—Click the mouse on this button to cancel the current drycode step.

1.2.5.7. **Skip to button (G)**—This button is enabled only when an administrator or an operator is logged in at the controller.

1.2.5.8. **Basket 2-way button (H)**—Click the mouse on this button to toggle basket rotation between one-way and two-way.

- 1.2.5.9. **Extend Time button (I)**—Click the mouse on this button to add one minute to the time of the current step. Each additional click adds another minute.
- 1.2.5.10. **Load Allowed/Not Allowed button (J)**—Performs the same function as the *Load Not Allowed* switch on the machine. Click this button to take the selected machine “off-line” (Not Allowed) or return it on-line (Load Allowed). While off-line, the machine will not request a load and the shuttle will not deliver cakes to this machine.
- 1.2.5.11. **View Inputs/Outputs button (K)**—Click this button to display the *Dryer I/O* window, which shows the on/off status of each microprocessor input and output for the selected machine.
- 1.2.5.12. **View Graph button (L)**—Click this button to display the *Temperature Profile* window for this machine, which shows a real-time graph of temperature and related information for the selected machine.

— End of BIPDGT01 —

Chapter 2

Normal Machine Operation

BIPDUO01 (Published) Book specs- Dates: 20080722 / 20080722 / 20080722 Lang: ENG01 Applic: PDU YDS

2.1. Dryer Operating Instructions for Plant Personnel

2.1.1. Start Here for Safety

This document is meant to remind you, the person operating this dryer, of what is required to operate this machine. Do not attempt to operate this machine before an experienced, trained operator explains the details to you.
















DANGER 3: Multiple Hazards—Careless operator actions can kill or injure personnel, damage or destroy the machine, damage property, and/or void the warranty.

DANGER 4: Electrocution and Electrical Burn Hazards—Contact with electric power can kill or seriously injure you. Electric power is present inside the cabinetry unless the main machine power disconnect is off.

- Know the location of the main machine disconnect and use it in an emergency to remove all electric power from the machine.
- Do not attempt unauthorized servicing, repairs, or modification.
- Do not unlock or open electric box doors.

2.1.2. Check Switch Settings

Display or Action	Explanation
	Verify that the <i>Run/Program</i> keyswitch is at  .
	All emergency stop buttons must be unlatched and in the <i>ready</i> position to allow machine operation.
	Verify that the master switch is at  .
	Verify that the <i>Load Not Allowed</i> switch is at  to allow automatic loading.
	Verify that the <i>Discharge Allowed</i> switch is at  to allow automatic discharging of processed goods.
	Verify that the <i>Local/Remote</i> switch is set to  to allow network communication.
	Verify that the <i>Automatic/Manual</i> switch is at  to allow automatic operation.

2.1.3. Loading the Machine

A Milnor system controller automatically operates this machine and other machines in the system. If all switches are positioned as described in [Section 2.1.2](#), the machine will accept, process, and discharge a load without manual intervention.

At start-up, the machine asks the operator if the machine is loaded. If the machine is not loaded, normal automatic operation begins. If the machine contains a load, the machine controller or Mildata computer will prompt the operator for the data associated with the load. When the operator enters and confirms all necessary batch data, begins operating in automatic mode.

2.1.4. What Does the Display Tell Me?

2.1.4.1. Drycode and Step Information for Gas-fired Dryers

Display or Action	Explanation
<div style="border: 1px solid black; padding: 2px;"> WAITING FOR LOAD ***** </div>	Dryer is idle.
<div style="border: 1px solid black; padding: 2px;"> LOADING ----- </div>	Dryer is loading.
<div style="border: 1px solid black; padding: 2px;"> 04F TIF TOF 031 AIR S01 425D185 012 000 </div>	<p><i>04F</i> indicates that the dryer is running drycode 04 for a full load; <i>04P</i> would represent a partial load.</p> <p><i>S01</i> is the current step number of the selected drycode.</p> <p><i>TIF</i> appears above the inlet temperature in degrees Fahrenheit (425 in this example). <i>TIC</i> appears when the dryer is configured for Celsius.</p> <p><i>TOF</i> appears above the outlet temperature in degrees Fahrenheit (185 in this example). <i>TOC</i> appears when the dryer is configured for Celsius.</p> <p><i>D</i> between the inlet and outlet temperatures represents <i>Desired</i> temperature. The display alternates to also show the <i>Actual</i> temperatures when <i>A</i> replaces <i>D</i>.</p> <p><i>031</i> represents the minutes and quarter-minutes of total run time (3 minutes and 15 seconds in this example).</p> <p><i>012</i> represents the time remaining in this step (1 minute and 30 seconds in this example).</p> <p><i>AIR</i> appears above the damper position (000 in this example, range is 000 through 002). The display alternates to also show the modulating valve position below <i>VP</i>.</p>

2.1.4.2. Drycode and Step Information for Steam Dryers

Display or Action	Explanation
<pre> WAITING FOR LOAD ***** </pre>	Dryer is idle.
<pre> LOADING ----- </pre>	Dryer is loading.
<pre> 04F TIF TOF 031 AIR S01 ---D--- 012 000 </pre>	<p><i>04F</i> indicates that the dryer is running drycode 04 for a full load; <i>04P</i> would represent a partial load.</p>

S01 is the current step number of the selected drycode.



Desired temperatures are not set on steam dryers. Actual temperatures are shown on the bottom line of the display, below *TIF (TIC)* and *TOF (TOC)*

031 represents the minutes and quarter-minutes of total run time (3 minutes and 15 seconds in this example).

012 represents the time remaining in this step (1 minute and 30 seconds in this example).

AIR appears above the damper position (000 in this example, range is 000 through 002). The display alternates to also show the steam ratio below *SR*.

2.1.5. Unloading the Machine

In automatic mode, the machine will discharge at the end of each dry cycle. To discharge the goods manually, set the *Discharge Allowed* switch to . Use  to jog the basket.

When the dryer is waiting to discharge or is discharging, the display alternates *WAITING TO DISCHARGE* or *DISCHARGING* with the batch data of the load being discharged.

Display or Action	Explanation
<pre> FM DC DS CC GC WDT 15 04 02 12 11 123 </pre>	<i>FM</i> appears above the wash formula number for the load.
	<i>DC</i> appears above the drycode number for the load.
	<i>DS</i> appears above the destination for the load.
	<i>CC</i> appears above the customer code for the load.
	<i>GC</i> appears above the goods code for the load.
	<i>WDT</i> appears above the elapsed time spent waiting to discharge.

— End of BIPDU001 —

Chapter 3

Signals and Errors

BICSUT01 (Published) Book specs- Dates: 20080722 / 20080722 / 20080722 Lang: ENG01 Applic: PDU YDS

3.1. Shuttle Error Messages

Most shuttle error messages and the conditions that cause them can be resolved by the operator. In some cases the operator will need to call for maintenance or management assistance. Maintenance assistance is needed in either of the following two circumstances:

- When the machine requires servicing to resolve the error.
- When an error must be resolved from inside the shuttle operating area with power on.

shuttle operating area—the area within which the shuttle moves during automatic operation and which must be guarded, as explained in ANSI Standard Z8.1-2006 “American National Standard for Commercial Laundry and Drycleaning Equipment and Operations - Safety Requirements.” Personnel who enter the shuttle operating area, whether to resolve an error, or for any other reason, must be properly trained in shuttle safety and abide by the published facility safety precautions.



WARNING 5: Strike and Crush Hazards—A shuttle moves unpredictably during automatic operation. Anyone within the operating area of the shuttle can be struck or crushed.

- Operators: Never enter the shuttle operating area unless power is reliably locked out.
- Maintenance personnel: Always disable automatic operation before entering the shuttle operating area.

From the standpoint of how to resolve the error, shuttle errors are of five types: time limit errors, level encoder counting errors, position errors, transfer errors, and errors that should be reported to management or maintenance personnel. The errors are listed by category and alphabetically within each category. You may need to look through more than one category to find the error you are looking for. The explanations for each category are in three parts:

1. a description of this category of error
2. a list of the errors and their descriptions
3. how to resolve an error of this type

3.1.1. About “THREE WIRE DISABLED PUSH START TO GO”

This message appears and the operator alarm sounds at startup until the *Start* button (ⓘ) is pressed. This message and signal will also occur if any emergency stop button is pressed, if a motor overload trips, or if certain other events occur. Although the errors described in this document do not, by themselves, disable the three-wire circuit, a few may coincide with events that do disable the three wire circuit. For example, if the shuttle traverses far enough to close an oops switch at the end of the rail and trigger a RAIL LIMIT error (see [Section 3.1.5](#)), the shuttle

foot guard may also hit an object and depress, opening the three wire circuit. In such a case, the THREE WIRE DISABLED message, not the RAIL LIMIT message will appear, requiring the shuttle to be physically moved far enough away from the object to release the foot guard.


3.1.2. Resuming Automatic Operation After Error Correction

The shuttle will initialize as a normal part of recovering from most of the errors described in this document. During this process it will usually traverse to its home station and/or move the elevating bed to the lowest level. If the shuttle contains goods, it may also prompt for cake data. In this event, the operator must be able to accurately enter or confirm the batch codes for the goods on each position of the shuttle.

3.1.3. Time Limit Errors

A time limit error occurs if a shuttle action is not completed within the specified time. It is likely that a temporary condition interfered with shuttle movement. If the specified time is configurable, there is a slight chance that the time value must be adjusted (see the shuttle configuration instructions in the reference manual). Time limit errors stop shuttle motion so that personnel can check for an interfering condition. These errors are as follows:

Display or Action	Explanation
ERROR - CHECK CHAIN PRESS SIGNAL CANCEL	While initializing, the shuttle bed failed to move to its maximum and minimum positions within the time specified in the “time to reach bottom-top” configure decision.
ERROR - NO CAKE PRESS SIGNAL CANCEL	During discharge, the discharge-end photo eye was not blocked within the time specified in the “clear belt time” configure decision.
ERR - NOT COUNTING PRESS SIGNAL CANCEL	More than 45 seconds elapsed between station targets while the shuttle was moving left or right.
ERROR- WAIT TOO LONG PRESS SIGNAL CANCEL	The receiving device did not acknowledge the machine's discharge within the time specified in the “allied load completed delay” configure decision.
TOO LONG TO DISCH. PRESS SIGNAL CANCEL	The belt is moving and the discharge-end photo eye is still blocked 30 seconds after the time specified in the “clear belt time” configure decision expires.
2 LONG COUNT LVL PRESS SIGNAL CANCEL	More than 30 seconds elapsed between level targets while the shuttle elevating bed was moving up or down.

Identify and correct any condition that may have prevented the action from occurring, then press the *Signal Cancel* button () to initialize the shuttle and resume automatic operation. If error recurs, call maintenance personnel.

3.1.4. Level Encoder Counting Errors

The controller for some shuttle models tracks the position of the elevating bed with an encoder that counts targets at each vertical level as the bed passes the target. An error occurs if the level encoder loses count. These errors stop shuttle motion so that the shuttle can be re-initialized. This category of error includes the following:

Display or Action	Explanation
CNTS EXCEEDED MAX PRESS SIGNAL CANCEL	The count exceeded the maximum value specified in the “number of receive levels” or the “number of discharge levels” configure decision, whichever applies.
CNTS FELL BELOW 0 PRESS SIGNAL CANCEL	The count is at, or about to fall below zero.
SAW SLACK CHAIN PRESS SIGNAL CANCEL	A slack chain condition occurred while the bed was moving down, but before reaching the desired count.

The condition that caused the encoder error is likely to be momentary and will probably not recur. Press the *Signal Cancel* button (✖) to initialize the shuttle and resume automatic operation. If the error recurs, call maintenance personnel.

3.1.5. Position Errors

This type of error indicates that the controller detects the shuttle or a shuttle component is in the wrong place. Shuttle motion stops so that it can be determined if manual intervention is needed. Manual intervention may involve removing goods that are blocking a photoeye, or repositioning the shuttle using the manual controls.



CAUTION [6]: Risk of damage—The manual controls override the photo eyes which normally prevent the shuttle from running a cake into an object, or onto the floor.

- Use care and consider the consequences before moving the shuttle manually.

The pertinent manual controls for each error are listed in the error description. This category of error includes the following:

Display or Action	Explanation
CAKE MUST BE MANUALLY UNLOADED	Applies to shuttles configured not to elevate the second belt to discharge. A cake is on belt 1 but not on belt 0. Pertinent manual controls: <i>Belt 1 Forward/Reverse</i> switch. With belt 1 aligned for discharge, hold switch at <i>Forward</i> (↗) until cake is discharged.
ERROR-NOT RETRACTED PRESS SIGNAL CANCEL	The shuttle desired to traverse, elevate, or descend, but the shuttle bed is not fully retracted. Pertinent manual controls: <i>Belt 0 Extend/Retract to Receive</i> switch (↔), <i>Belt 0 Extend/Retract to Discharge</i> switch (↔), <i>Belt Fully Retracted</i> light. Operate the appropriate switch to illuminate the light.
ERROR - RAIL LIMIT PRESS SIGNAL CANCEL	The shuttle traversed too far right or left, actuated the oops switch, and remained there longer than five seconds. Pertinent manual control: <i>Travel Left/Right</i> switch (↔).
ERROR - SLACK CHAIN PRESS SIGNAL CANCEL	The shuttle bed either descended onto its lower mechanical stop or met an obstruction while descending. Pertinent manual controls: <i>Enable Down/Up</i> key switch, <i>Move Down</i> switch (↓) or <i>Move Down/Up</i> switch (↓/↑), as applicable.
ERROR - TAUT CHAIN PRESS SIGNAL CANCEL	The shuttle bed either struck its upper mechanical stop or met another obstruction while rising. Pertinent manual controls: <i>Enable Down/Up</i> key switch, <i>Move Down</i> switch (↓) or <i>Move Down/Up</i> switch (↓/↑), as applicable, and <i>Taut Chain</i> light. Set the key switch for manual operation and operate the switch. In a taut chain condition, the light is illuminated and goes out when the condition is eliminated.
EXTENDING TOO FAR ADJUST BELT MANUALLY	The shuttle bed went beyond its fully extended position. Pertinent manual controls: <i>Belt 0 Extend/Retract to Discharge</i> switch (↔), <i>Belt 0 Fully Extended to Discharge</i> light. Operate the switch to illuminate the light.
RETRACTING TOO FAR ADJUST BELT MANUALLY	The shuttle bed went beyond its fully retracted position. Pertinent manual controls: <i>Belt 0 Extend/Retract to Receive</i> switch (↔), <i>Belt 0 Extend/Retract to Discharge</i> switch (↔), <i>Belt Fully Retracted</i> light. Operate the appropriate switch until the light illuminates.

Correct a position error as follows:

Display or Action

Explanation



Set the *Automatic/Manual* switch to *Manual*.

Use the appropriate manual controls (explained above) to position the shuttle properly. In the case of a chain error, you will need access to the key-operated *Enable Down/Up* switch. If the shuttle will not respond, call maintenance personnel. If you are able to re-position the shuttle:



Return the *Automatic/Manual* switch to *Automatic*.

BARE MANUAL-PRESS
SKIPTO TO EXIT

This message appears when returning to automatic mode after using the manual controls.



Press the SKIP TO key (keypad) or button (DryNet device display) to start shuttle initialization.

3.1.6. Transfer Errors

An error of this type occurs if, for example, a piece of goods separates from a pressed cake and blocks a photo eye. These errors include the following:

Display or Action

Explanation

ERROR - EYE ERROR 1
PRESS SIGNAL CANCEL

Either the load-end or discharge-end photo eye is blocked on a multi-cake belt when the shuttle desires to move, indicating that a cake may be protruding off of the belt, risking damage. EYE ERROR 2 is similar. Each error applies to specific models.

ERROR - EYE ERROR 3
PRESS SIGNAL CANCEL

The discharge-end photo eye on a multi-cake belt did not block and clear as many times, during discharge, as the controller believes there are cakes; that is, the controller counted too few cakes. This can occur if goods straddle two cakes making them indistinguishable to the controller.

ERROR - EYE ERROR 4
PRESS SIGNAL CANCEL

The discharge-end photo eye on a multi-cake belt blocks during loading, indicating that cake(s) following the first cake, may be missing. When a multi-cake belt is loaded, the last cake should clear the load-end photo eye and stop the belt before the first cake blocks the discharge-end photo-eye. This error can occur if loosely compacted cakes spread apart and take up too much room on the belt.

ERROR - EYE ERROR 5
PRESS SIGNAL CANCEL

The load-end and discharge-end photo eyes are both blocked when the shuttle desires to traverse or lower the bed, indicating that a cake may protrude from the belt, risking damage.





ERROR - EYE ERROR 6
PRESS SIGNAL CANCEL

The overshoot photoeye is blocked when the shuttle desires to traverse or raise/lower the bed, indicating that a cake may protrude from the belt, risking damage.

ERROR - XFER ABORTED
PRESS SIGNAL CANCEL

The Miltrac controller cancelled the transfer in progress. For example, one of the photo eye errors described above occurs after the transfer process starts, but before communication with Miltrac is completed.

Observing published safety precautions, clear an improperly blocked photoeye by physically removing the goods or by manually running the belt to move the goods, as follows:

Display or Action	Explanation
	 Set the <i>Automatic/Manual</i> switch to <i>Manual</i> .
	 Use the appropriate <i>Belt x Forward/Reverse</i> switch (up to four vertically stacked belts, numbered 0 through 3, from bottom to top) to run that belt and complete or correct the transfer.
	 Return the <i>Automatic/Manual</i> switch to <i>Automatic</i> .
<div style="border: 1px solid black; padding: 2px; width: fit-content;">BARE MANUAL-PRESS SKIPTO TO EXIT</div>	This message appears when returning to automatic mode after using the manual controls.
	Press the SKIP TO key (keypad) or button (DryNet device display) to start shuttle initialization and resume automatic operation.

3.1.7. Errors That Should Be Reported to Management or Maintenance Personnel

The following errors have consequences that should be resolved by management personnel. Addressing the consequences resolves the error.

Display or Action	Explanation
<div style="border: 1px solid black; padding: 2px; width: fit-content;">CHECK I/O BOARD x PRESS SIGNAL CANCEL</div>	The controller detects a failed or missing control circuit board. If this error occurred immediately after configure values were programmed, it is probably the result of specifying an optional feature that is not actually present on the machine. If it occurred after adding hardware for an optional feature, it indicates that this feature has not yet been specified in configuration. Otherwise, it probably indicates that a board or related circuitry has failed.
<div style="border: 1px solid black; padding: 2px; width: fit-content;">CLEAR MEMORY NOW PRESS 4 + 5 + 6</div>	Field-programmable data became corrupt. Configure values must be re-programmed as explained in the part of the reference manual on programming.
<div style="border: 1px solid black; padding: 2px; width: fit-content;">ERROR - TOO MANY DIR PRESS SIGNAL CANCEL</div>	The right and left direction inputs from an allied loading device were actuated at the same time. This is a control circuitry malfunction requiring electrical troubleshooting.
<div style="border: 1px solid black; padding: 2px; width: fit-content;">PROGRAM 0 MENU OK TURN KEY TO RUN</div>	The Run/Program key has been left in the machine and the switch is in the <i>Program</i> position. This key should be removed and placed in a secure location accessible only to management personnel.

— End of BICSUT01 —

3.2. Dryer Error Messages

Most dryer error messages and the conditions that cause them can be resolved by the operator. In some cases the operator will need to call for maintenance or management assistance. If the dryer is automatically loaded by a shuttle conveyor, do not enter the shuttle operating area to resolve an error unless properly trained in shuttle safety. Abide by the published facility safety precautions.



WARNING 7: Strike and Crush Hazards—The shuttle conveyor that serves a line of automatically-loaded dryers moves unpredictably during automatic operation. As it traverses, it passes, almost touching the front of each dryer. Anyone at or near the front of a dryer can be struck or crushed.

- Operators: Never enter the shuttle operating area unless power is reliably locked out.
- Maintenance personnel: Always disable automatic operation before entering the shuttle operating area.

From the standpoint of how to resolve the error, dryer errors are of four types: overheat errors, load door advisories, other automatic operation errors, and errors that should be reported to management or maintenance personnel. The errors are listed by category and alphabetically within each category. You may need to look through more than one category to find the error you are looking for. The explanations for each category are in three parts:

1. a description of this category of error
2. a list of the errors and their descriptions
3. how to resolve an error of this type

3.2.1. About the “THREE WIRE DISABLED” Message

This message appears and the operator alarm sounds at startup until the *Start* button (ⓘ) is pressed. This message and signal will also occur if any emergency stop button is pressed, if a motor overload trips, or if certain other events occur. A few errors described in this document may coincide with events that disable the three-wire circuit. When this occurs, the THREE WIRE DISABLED message, and not the error message, will typically appear on the display. However, two important special cases are explained in [Section 3.2.2 “Overheat Errors”](#).

3.2.2. Overheat Errors

An overheat error occurs if the controller detects an outlet temperature exceeding the permissible value. Although an overheat error can have numerous causes, the controller assumes there is a fire in the basket and takes the following actions:

- opens the three wire circuit, which:
 - » shuts off the heat source (e.g., closes the gas valve)
 - » shuts off the main air flow
 - » stops basket rotation

- actuates the internal sprinkler, which sprays water into the basket

Display or Action

```
OUTLET TEMP EXCEEDED
240dF -POWER DOWN-
```

Explanation

A redundant safety feature on the dryer will trigger this error if outlet temperature exceeds 240° Fahrenheit (116° Celsius). This event will not occur as a result of an actual temperature rise unless the THREE WIRE DISABLED condition, explained below, fails, perhaps due to a component failure. This error is triggered in software, based on the outlet temperature input. Hence, this error may occur erroneously, due to an electrical component failure such as a failed A/D board. Although the three wire circuit opens when this event occurs, this error message will take precedence over the THREE WIRE DISABLED message.

```
THREE WIRE DISABLED
*****
```

This message may be the result of the outlet temperature exceeding 225° Fahrenheit (107° Celsius), but it may also have other causes. Whenever this message appears during operation (after the *Start* button is pressed), **immediately check to see if the sprinkler mechanism (mounted on the side of the discharge shroud) is actuated** and if so, resolve this message as an overheat error. This error is triggered by either of two temperature safety switches (Fenwal switches) mounted in the outlet duct.

Resolve an overheat error as follows:

Display or Action**Explanation**

1. If the OUTLET TEMP EXCEEDED 240dF error occurred, turn the dryer *Master* switch off, then back on. This is required to reset the Desires Sprinkler output relay. Otherwise it will not be possible to shut off the sprinkler.
2. If there is no evidence of fire, **pull down the red handle on the sprinkler mechanism until the handle locks in place**, to stop the flow of water into the basket, but continue to observe for evidence of fire and be prepared to re-activate the sprinkler.



Press the dryer *Start* button. If outlet temperature has not cooled below 214° Fahrenheit (101° Celsius), the three wire circuit will not energize. Wait until the dryer has cooled sufficiently.

Once the three wire circuit is energized, use the manual controls to discharge any fire-damaged goods. Use all necessary fire safety precautions when doing so. If a basket fire did occur, the dryer will need to be inspected for damage before returning it to service. Otherwise, with the dryer *Automatic/Manual* switch set to *Automatic*, the dryer should resume automatic operation. If no fire occurred but the error recurs, this indicates a malfunctioning component. Call maintenance personnel.

3.2.3. Load Door Advisories

These messages occur with no accompanying operator alarm if the load door does not open or close within 15 seconds after being commanded to do so. Processing will not proceed until the

action occurs, but will resume without any intervention once the appropriate load door input is made.

Display or Action

Explanation


LOAD DOOR NOT OPEN	The load door did not open within the specified time. The door may not have moved to the needed position due to a mechanical problem such as low air pressure. This error could also occur erroneously as a result of a problem such as a failed proximity switch.
LOAD DOOR OPEN	The load door did not close within the specified time. This is most likely due to a piece of goods blocking the door, but it could also be for a similar reason as LOAD DOOR NOT OPEN.
DISCHARGE DOOR OPEN	The discharge door did not close within the specified time, when commanded to do so at loading. This could also be for a similar reason as LOAD DOOR NOT OPEN.

If the condition does not self-correct within a short time, investigate, and correct any condition interfering with load door operation. This will require personnel with the appropriate qualifications and authority, and compliance with published facility safety precautions. If the condition self-corrects, but recurs, call maintenance personnel.

3.2.4. Other Automatic Operation Errors

The errors in this category are accompanied by the operator signal. Dryer operation stops so that it can be determined if intervention is needed.

Display or Action	Explanation
CHECK ERROR LIGHTS	This error only applies to gas and propane dryers. Numerous conditions must be satisfied before the Fireye or Landis & Gyr brand (as specified) flame control system will ignite the burner or permit it to remain lit. This error indicates that not all conditions are satisfied. The machine controller does not monitor these condition individually, but several conditions are represented by lights on the dryer status (error) light panel. When illuminated, certain lights indicate that a particular condition is satisfied while others indicate an un-met, or error condition. Refer to the description of dryer controls for an explanation of each status light.
DISCHARGE DOOR NOT CLOSED AFTER DISCH.	The discharge door did not close fully after discharge. This may be due to goods blocking the door, to a mechanical problem such as low air pressure, or to an electrical problem such as a failed proximity switch.
ROTATION FAILURE	The basket stopped rotating for more than 8 seconds during a dry cycle. If the basket is actually not rotating properly, some possible causes include goods caught in the basket seals, condensation on the basket support rollers causing the basket to slip, and a malfunctioning inverter. The error can also be caused by a problem that prevents the controller from detecting basket rotation, such as a mis-aligned proximity switch, or a burned out capacitor in the motion sensing circuit.
TRANSFER ABORTED CLEAR SHUTTLE FIRST	The Miltrac controller cancelled the transfer in progress. For example, a piece of goods blocked the discharge-end photo eye on the shuttle. Hence this error usually means that the shuttle is stopped in front of this dryer and both devices have errors. The shuttle error must be addressed first. Refer to the instructions on shuttle error messages.

Press the *Signal Cancel* button () to silence the operator alarm. If the error self-corrected, automatic operation should resume. If not, investigate and correct the problem. This will require personnel with the appropriate qualifications and authority and compliance with the published facility safety precautions. If the condition self-corrects, but recurs, call maintenance personnel.

3.2.5. Messages That Should Be Reported to Management or Maintenance Personnel

The following errors have consequences that should be resolved by management or maintenance personnel. Addressing the consequences resolves the error.

Display or Action	Explanation
<pre>ERROR IN MEMORY TURN KEY TO PROGRAM</pre>	<p>Field-programmable data (configuration and/or drycodes) became corrupt (unreliable). The correct data must be downloaded or re-programmed, as explained in the part of the reference manual on programming.</p>
<pre>ILLEGAL DRYCODE xxx SEE MANUAL</pre>	<p>The dryer controller received a request to run a drycode that is not currently programmed; that is, the drycode is not local. The drycode number, along with other batch codes, originated in the Mentor or Mildata computer. It is the responsibility of the person who associates the post-wash codes with the wash formula to ensure that the assigned codes are valid. If goods are permitted to be processed in the dryer using an invalid (illegal) drycode, the dryer will simply discharge the goods wet. The operator may be able to resolve this immediate problem by cancelling the operator signal (\times) then invoking another suitable drycode; however, management personnel will need to ensure that either the specified drycode is programmed in (or downloaded to) the dryer or that a valid drycode number is associated with the wash formula in Mentor programming.</p>
<pre>INVALID PASSWORD</pre>	<p>This message does not apply to dryers in a DryNet (Dryer/Shuttle Controller) network. If the dryer is configured to require a password for manual intervention and the operator does not have one, this will need to be obtained from management personnel.</p>
<pre>name BOARD FAILED PRESS SIGNAL CANCEL</pre>	<p>The named peripheral board is not communicating with the microprocessor. This will require electrical troubleshooting.</p>

— End of BIPDUT01 —