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Operator Guide

Mark VI Centrifugal Extractor Control System



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1 How to use the Centrifugal Extractor

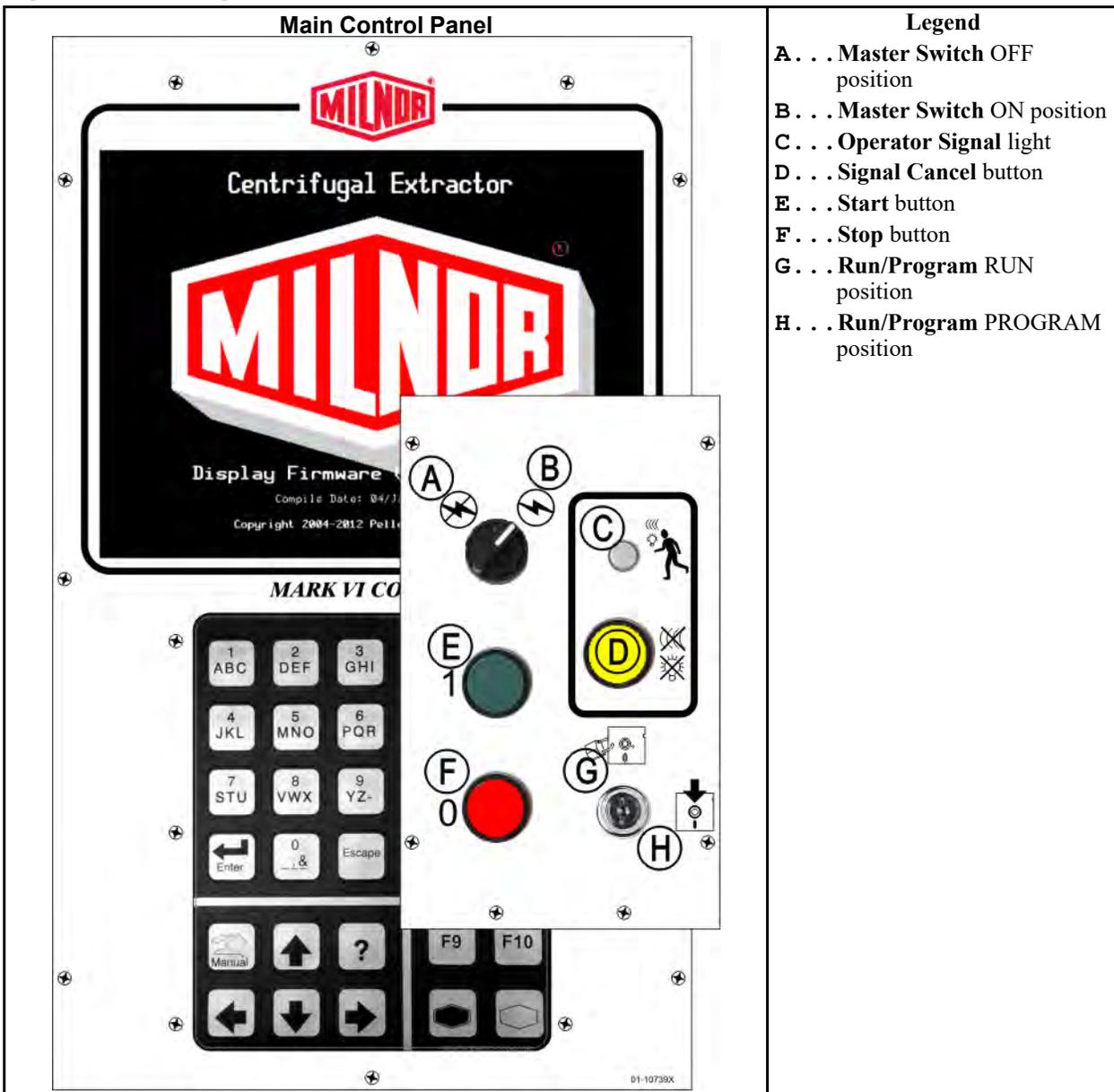
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1.1 Centrifugal Extractor Controls

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Figure 1. Centrifugal Extractor Controls



Master Switch — This switch controls single-phase control circuit power to the machine and the DC power supply for the microprocessor and its components. Set this switch to OFF to stop the machine.

Operator Signal — This signal is activated when operator attention is required, as when unloading is required or certain errors occur. Push the **Signal Cancel** button to cancel the signal.

Signal Cancel button — This button extinguishes the **Operator Signal**. If the signal was programmed as part of a formula, the formula resumes after this button is pressed. If an error caused the **Operator Signal**, press this button after correcting the error to end the signal. If the **Operator Signal** was illuminated when a valid formula was selected, the signal will terminate automatically when the formula is started or the door is opened.

Run/Program keyswitch — Setting the keyswitch to RUN prevents programmed data from being changed and allows normal machine operation. Setting the keyswitch to PROGRAM allows programming machine operation and certain troubleshooting procedures.

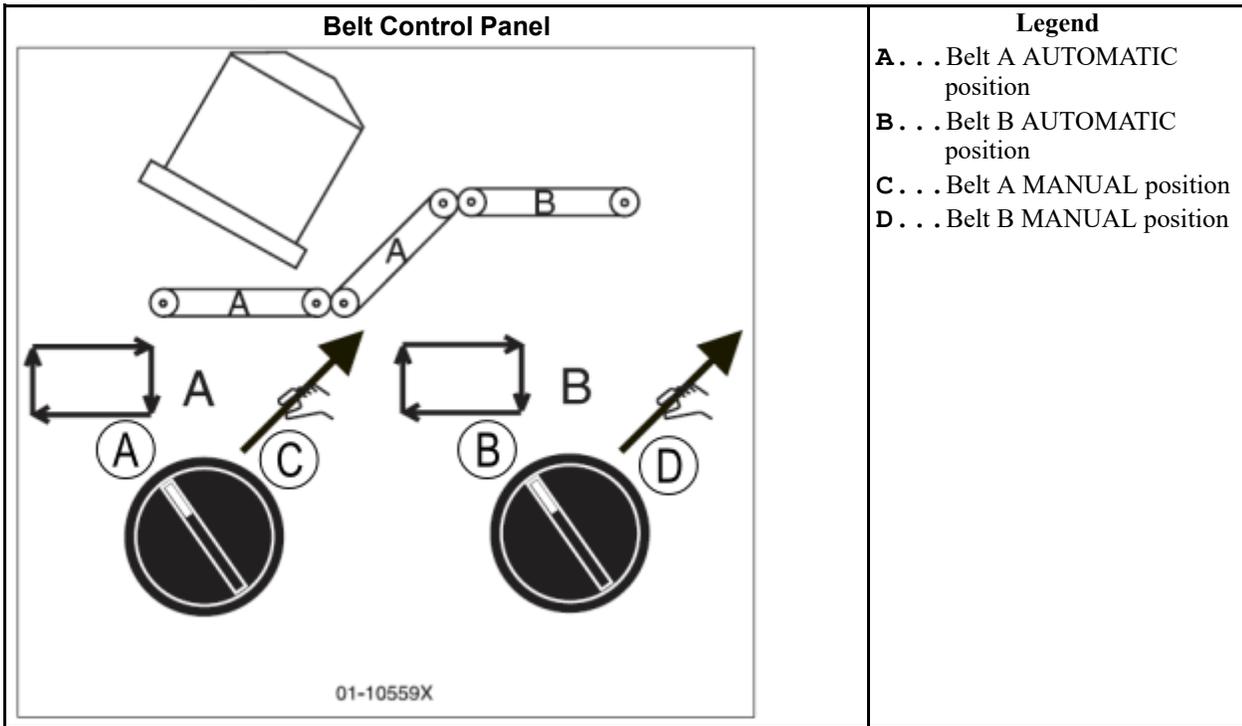
Stop button — This button stops the machine immediately by opening the three-wire circuit. The **Emergency Stop** buttons perform the same function. Pull cords and kick plates, if the machine has them, also perform the same function.

Start button — This button enables machine operation if certain safety considerations are met. When operation is enabled, the machine will operate in manual or automatic mode.

Run Belt A Automatic/Manual switch — When set to AUTOMATIC, both belts A run when commanded by the microprocessor. When set to MANUAL, the belts run continuously.

Run Belt B Automatic/Manual switch — When set to AUTOMATIC, belt B runs when commanded by the microprocessor. When set to MANUAL, the belt runs continuously.

Figure 2. Centrifugal Extractor Controls



Emergency Stop button — This large red button in a yellow rectangle may appear in several locations on the machine. It performs the same function as the STOP button, but locks in the depressed position and must be turned to release the button and close the circuit before operation can resume.

Cover Safety Bypass keyswitch — This keyswitch must be set to AUTOMATIC and the key removed for normal operation. In the AUTOMATIC position, removing any access panel stops the machine immediately. Setting the keyswitch to MANUAL permits maintenance personnel to remove access panels and run the machine to observe machine functioning. This switch is located inside the control box and mounted such that the key must be removed from the keyswitch before the control box door can be closed.

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1.2 Normal Operation

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The normal operating mode of the machine is fully automatic. After the machine is set for automatic operation, a new load and the data for the load pass from the loading device to the machine when the loading device is ready to discharge and the machine is ready to receive. Before the extractor receives a new load, the processed goods are discharged onto a storage belt or to the receiving shuttle, freeing the machine for the next load.

Comply with all safety instructions that are written in this manual and posted on this machine.

At the start of each day, do a check of all the switches on the machine. Be sure that all switches are in the correct position for automatic operation.

Turn the **Master Switch** to the ON position.

1.2.1 How to Start the Machine

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1.2.1.1 Be Safe

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Comply with all safety instructions in this manual and on this machine.

1.2.1.2 Verify Switch Positions

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Set the **Run/Program** keyswitch to the **RUN** position.

1.2.1.3 Turn the Microprocessor Controller ON

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Set the Master switch to ON. The operator signal sounds and a series of displays appear.



DANGER: Strike and Crush Hazards — A traveling machine such as a shuttle can strike, crush, or entrap you if you ride on it or enter its path. Traveling machines or their components can move automatically in any direction. Placing a system machine on-line by energizing the machine control may immediately summon a shuttle or other traveling machine.



- ▶ Keep yourself and others clear of movement areas and paths.
- ▶ Understand the consequences of placing a system machine on-line.
- ▶ Know the location of all emergency stop switches, pull cords, and/or kick plates and use them in an emergency to stop machine motion. These may not stop certain devices such as pumps on some machines.



WARNING: Fall, Entangle, and Strike Hazards — Machine motion can cause you to fall or become entangled in or struck by nearby objects if you stand, walk, or ride on the machine. Shuttles and conveyor belts move automatically.



- ▶ Keep yourself and others off the machine.

1.2.1.4 Turn the Machine ON

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Push the **Start** button to initialize for automatic operation and silence the operator signal.

1.2.1.5 Enter Cake Data

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If you answer YES when the controller asks if the machine has a cake, then the machine will ask for some or all of the cake information shown below. The sequence may vary from the sequence shown here. Enter a value and press the **Enter** button at each prompt.

Table 1. Types of Cake Data

Display Message	Valid Values	Description
enter the Wash Formula	000–255	Wash formula number
enter the Remote Formula	000-999	Wash formula number
enter the Work Order Number	000-999	Work order number for accounting
enter the Extract Code	00-15	Extractor code for this load
enter the Dry Code	00-15	Dryer code for this load
enter the Destination Code	000–255	Shuttle discharge destination
enter the Customer Code	000-999	Customer code for accounting
enter the Goods Code	000-999	Goods code for this load
enter the Pieces count	000-999	Quantity information for accounting
enter the Soil Weight	00–99	Weight information for accounting
enter the Cake Number	000–255	Cake number for handling
enter the Load Size	0, 1	0=full load, 1=partial load; used to determine dry code
enter the Employee Number	000-999	Employee number for accounting
enter the Lot Number	000-999	Lot number for accounting

If the extractor has a load to extract or the loading device discharges a new load, the controller does not show the normal run display.

1.2.2 Monitor Normal Operation

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1.2.2.1 Display During Normal Operation

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Figure 3. Normal Run Display

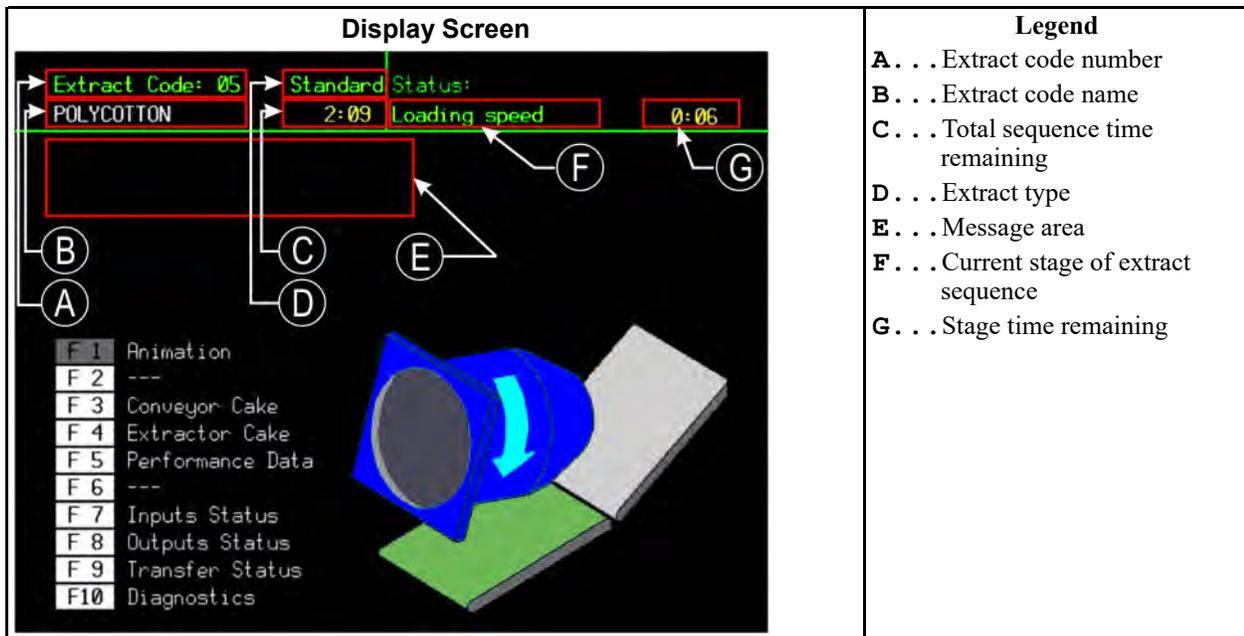


Table 2. Example Cycle and Stage Displays

Normal Run Display		Stage Displays	
Data	What It Means	Data	What It Means
5	Extract formula number	EXCURSION EXCEEDED	Balancing the load
POLYCOTTON	Extract formula name or current action	BRAKING SPEED SWITCH OPEN	Beginning the braking sequence
2:09	Total time remaining in sequence	WAIT TIME 00:30	Inflating cylinder ribs
Loading speed	Current stage of extract sequence	DSG WAIT TIME 00:12	Waiting for the receiving device
0:06	Counts down the time remaining in this stage (minutes and seconds). Counts up additional extract time.	DISCHARGE DELAY TIME 00:07	Deflating cylinder ribs
		DISCHARGE JOG #01 JOG ON 00:05	Jogs for formula counting down (#xx)
		CONVEYOR STATUS RUN BELT 00:09	Belt movement and time remaining to clear belt.

1.2.2.2 Extract Code Stages

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Each extract code progresses through stages as it runs. Not all extract codes will use all of the stages listed below.

Loading speed The cylinder is turning while loading.

Slow speed The cylinder is accelerating from loading speed to distribution speed.

Distribution speed The cylinder is turning at distribution speed to spread the goods around the cylinder.

Low extract speed xxx The cylinder is turning at low extract speed.

High extract speed xxx The cylinder is turning at high extract speed.

Braking The cylinder is braking to a slower speed.

Slow reversing The cylinder is reversing at slow speed.

Waiting for Load The extractor is in automatic mode and waiting for a load from its loading device.

Loading in Progress The extractor is receiving a load from the loading device.

Tilt Up The cylinder is tilting up to the discharge position.

Waiting to Discharge The extractor is waiting for the receiving device to get ready.

Discharge in Progress The extractor is discharging goods to the receiving device.

Tilt Down The cylinder is tilting down to return from the discharge position to the loading position.

Inflating Ribs The air valve is open to inflate the ribs, if equipped.

Deflating Ribs The cylinder is in the full up position and the ribs are deflating.

Fault An error occurred.

Speed Switch Open The cylinder is rotating faster than the threshold set by the speed switch.

Jog Run The cylinder is running in jog mode while discharging goods.

Jog Stop The cylinder is stopped in jog mode while discharging goods.

Run Belt The belt is running to discharge goods.

Excursion Exceeded The excursing limit was exceeded

Receive Empty Load The extractor is accepting an empty load from the Miltrac™ controller.

Accessing Mildata® If the machine is part of a Mildata® network, this display appears while the extractor is receiving a formula from the Mildata® computer. The request is terminated if the three-wire input is lost after the formula data is requested.

3-wire Recovery The extractor is recovering from an open 3-wire circuit.

Initializing The extractor is locating the cylinder for operation.

2 Centrifugal Extractor Error Messages

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2.1 Correcting Errors

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The error messages that appear on the display may require action by the operator, management personnel, or an authorized service representative.

2.1.1 Interruptions Repairable by the Operator

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These errors can usually be corrected at the operator controls.

Display or Action	Explanation
THREE WIRE DISABLED any message	The three-wire relay supplying control circuit power to the machine was de-energized or power was restored to the machine after a shutdown or power loss. Recovery: Press Start to close the three-wire circuit. If the three-wire circuit remains disabled or another message appears on the display, request authorized service.
Photoeye Blocked	The photoeye on the discharge conveyor was blocked when the belt should be empty. Recovery: Clear the photoeye and cancel the operator signal to resume.
Accumulator Data Error / Press ENTER to Clear Data	Accumulator data was determined to be invalid (usually because of a power surge at power ON). Recovery: Clear the accumulator data and resume operation.
Receive Fault	The unloading device cancelled the transfer, or the formula code received was not programmed in the extractor control, causing a malfunction during transfer. Recovery: Cancel the operator signal and enter cake data to resume operation.
Transfer Fault	The receiving device malfunctioned as the extractor attempted discharge. Recovery: Cancel the operator signal and enter cake data to resume operation.

Display or Action	Explanation
Load Eye was Blocked	<p>The load end photo-eye detected goods or was blocked three times during the last "Check Load Eye Time" of distribution.</p> <p>Recovery: Cancel the operator signal and enter cake data to resume operation.</p>
Redistribution Fault	<p>There have been three unsuccessful attempts to redistribute the load after an out-of-balance condition during extract tripped the excursion switch.</p> <p>Recovery: Re-distribute the goods in the extractor. This condition must be corrected before operation can resume.</p>
Failed to Block Photoeye	<p>The photoeye on the conveyor failed to detect a load during discharge.</p> <p>Recovery: Check the load on the discharge conveyor and cancel the operator signal to resume.</p>
Failed to Clear Photoeye	<p>The load on the conveyor failed to clear the photoeye during discharge.</p> <p>Recovery: Check the load on the discharge conveyor and cancel the operator signal to resume.</p>

2.1.2 Interruptions Requiring Management Assistance

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These errors usually require accessing program data and procedures as described in the reference manual.

Display or Action	Explanation
Invalid Work Order	<p>The extract formula requested from Mildata® contains an invalid work order number.</p> <p>Recovery: Check the Mildata® extract formula and cancel the operator signal to resume.</p>
Invalid Goods Code	<p>The extract formula requested from Mildata® contains an invalid goods code.</p> <p>Recovery: Check the Mildata® extract formula and cancel the operator signal to resume.</p>
Invalid Customer Code	<p>The extract formula requested from Mildata® contains an invalid customer code.</p> <p>Recovery: Check the Mildata® extract formula and cancel the operator signal to resume.</p>
Invalid Employee Number	<p>The extract formula requested from Mildata® contains an invalid employee number.</p> <p>Recovery: Check the Mildata® extract formula and cancel the operator signal to resume.</p>

Display or Action	Explanation
Invalid Extract Code	The extract formula requested from Mildata® contains an invalid extract code. Recovery: Check the Mildata® extract formula and cancel the operator signal to resume.
Data Not Found	The extract formula requested from the Mildata® system is invalid. Recovery: Check the Mildata® extract formula and cancel the operator signal to resume.

2.1.3 Interruptions Requiring Authorized Service

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These errors usually require accessing mechanical or electrical components. Request authorized service in accordance with published safety information. See the safety manual.

Display or Action	Explanation
Peripheral Board Failure / board name	The named circuit board failed or is missing. Request authorized service. Recovery: Touch Cancel to reset the control and access the Program Menu . If the error is corrected, a formula can be run in either automatic or manual mode.
Limit Switch Failed	The down and up limit switches are made simultaneously. Recovery: Request authorized service. Cancel the operator signal to resume operation after the error is corrected.
Brake Fault Clear Fault to Restart	The brake pressure switch detected insufficient air pressure in the brake release air cylinder to guarantee brake has released. Recovery: Request authorized service. The message clears when the switch detects adequate pressure.
Load Chute Is Not Down	The load chute did not descend to the loading position within 10 seconds after the loading sequence started. Recovery: Request authorized service. The message clears when the load chute descends fully.
Load Door Is Not Up	The load door did not rise to the full up position within 10 seconds after the loading sequence or the discharge sequence started.
Load Door Is Not Down	The load door did not descend to the full down position within 10 seconds after the loading sequence or the discharge sequence started.
Load Chute Is Not Up	The load chute did not rise to the full up position before the last five seconds of the distribution phase of the cycle. Recovery: Request authorized service. Press Signal Cancel to restart the cycle after the error is corrected.

Display or Action	Explanation
Conveyor Door is Not Down	<p>The moving panel permitting clearance for the extractor drain did not move down within five seconds after the extractor tilted up to discharge.</p> <p>Recovery: Request authorized service. The message clears when the door is down.</p>
Conveyor Door is Not Up	<p>The conveyor door must move to the full down position within five seconds of the extractor tilting fully up to discharge. A malfunction in the door mechanism or the down proximity switch causes this error.</p> <p>Recovery: The error clears automatically when the Conveyor Door Down input is made.</p>
—Keypad Error— [key name]	<p>A keypad key was stuck or shorted.</p> <p>Recovery: Request authorized service.</p>
Speed Switch is Open	<p>The speed switch circuit is open.</p> <p>Recovery: If the cylinder is stationary, request authorized service. The message clears when the circuit closes.</p>
Check Brake Shoes	<p>The machine controller checks the brake pad input when power is applied to the machine or after the configured time after power-up expires. Request authorized service.</p> <p>Recovery: Press Signal Cancel to clear the error. The error will appear again until the required service is completed.</p>
Inverter Fault	<p>The machine controller detected an inverter fault condition.</p> <p>Recovery: Authorized service is required to resume operation.</p>
Data Request Error Check MILDATA Link	<p>The machine control did not receive a valid response from the Mildata[®] system.</p> <p>Recovery: Request authorized maintenance.</p>
Too Long to Tilt Up	<p>The extractor did not tilt to the full up position for loading in the allowed time.</p> <p>Recovery: Request authorized service on the tilt system or the full up proximity switch.</p>
Too Long to Tilt Down	<p>The extractor did not tilt to the full down position for discharging in the allowed time.</p> <p>Recovery: Request authorized service on the tilt system or the full up proximity switch.</p>
Cylinder Not Fully Down	<p>The machine control does not see the input from the full down tilt switch.</p> <p>Recovery: Request authorized service on the full down switch or the tilt system.</p>

Display or Action

Speed Switch Fault

Explanation

The speed switch is closed when the machine controller expects it to be open. Either the basket is not rotating or the speed switch circuit malfunctioned.

Recovery: Request authorized service.