

Cobra Winter Spray System User Manual

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Introduction

Cobra System User Manual

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The purpose of this document is to provide a detailed description of the installation, operating and maintenance of the Cobra Winter Spray system.

The Cobra system applies a deicing product manufactured by Midwest Industrial Supply, inc. to prevent ice buildup on material handling conveyor belts in order to maintain operation and prevent material slippage on the conveyor.

- The Cobra Winter Spray System comes in a frame and is simple to set up using no special tools
- Capable of spraying at the head pulley, tail pulley, or at the bend pulley
- Once everything is connected and the spray duration set based on the belt length, the Cobra will spray the conveyor belt automatically or it will spray the belt once if the system is set in Press and Go mode
- System is capable of full range pressure output adjustment through the pressure relief valve

You Will Need

- Single phase 120 VAC Power connections
- Minimum of 10 amps rating
- Minimum free area of 33" L x 20" W
- A drum or tote of Deicing chemical product manufactured by Midwest Industrial Supply, Inc.

Before You Get Started

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Pos.	Description	Qty.	Check
A	Cobra Winter Spray System	1	
B	Inlet Suction Assembly	1	
C	Spray Manifold	1	
D	Discharge Hose to the Spray Manifold	100 Feet	
E	Solenoid Control Valve	1	



Positioning

The system should be installed in an area away from any hazardous location, obstruction, safety equipment such as eye wash station and safety shower, and frequent motor vehicle traffics.

Restrictions

A total of 100 feet of discharge hosing is supplied for each Cobra Deicing System to the spray manifold. This will restrict placement of the unit to within 100 feet of the spray location.

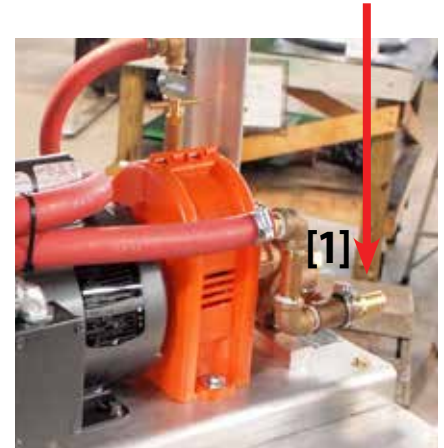
Power Hook-Up

Power source shall be supplied by the customer.

- Connect chemical suction assembly with clear tube to Ø ¾" inlet hose barb fitting [1]
- Connect the red discharge hose to Ø ¾" discharge hose barb with the manual valve

Note 1: If chemical is on site at the time, place the 40" steel chemical suction lance into the chemical solution for suction

Note 2: The solenoid valve can be installed at either the discharge hose splitter or at the spray manifold



Initial Start-Up of the System

- During the initial start-up of the system, please note that the first spray will not have adequate chemical application to the conveyor belt

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To ensure accurate chemical application that covers the whole conveyor belt, the operator will need to initially set the system to manual Press and Go mode, run the system a couple times or until deicing chemical is spraying out of the spray manifold before placing the system in Auto mode.

After Replacing the Chemical Drum or Tote

- Operator shall follow the same start-up procedure by placing the system in manual Press and Go mode and make sure the deicing chemical is spraying out of the spray manifold before placing the system back in Auto mode

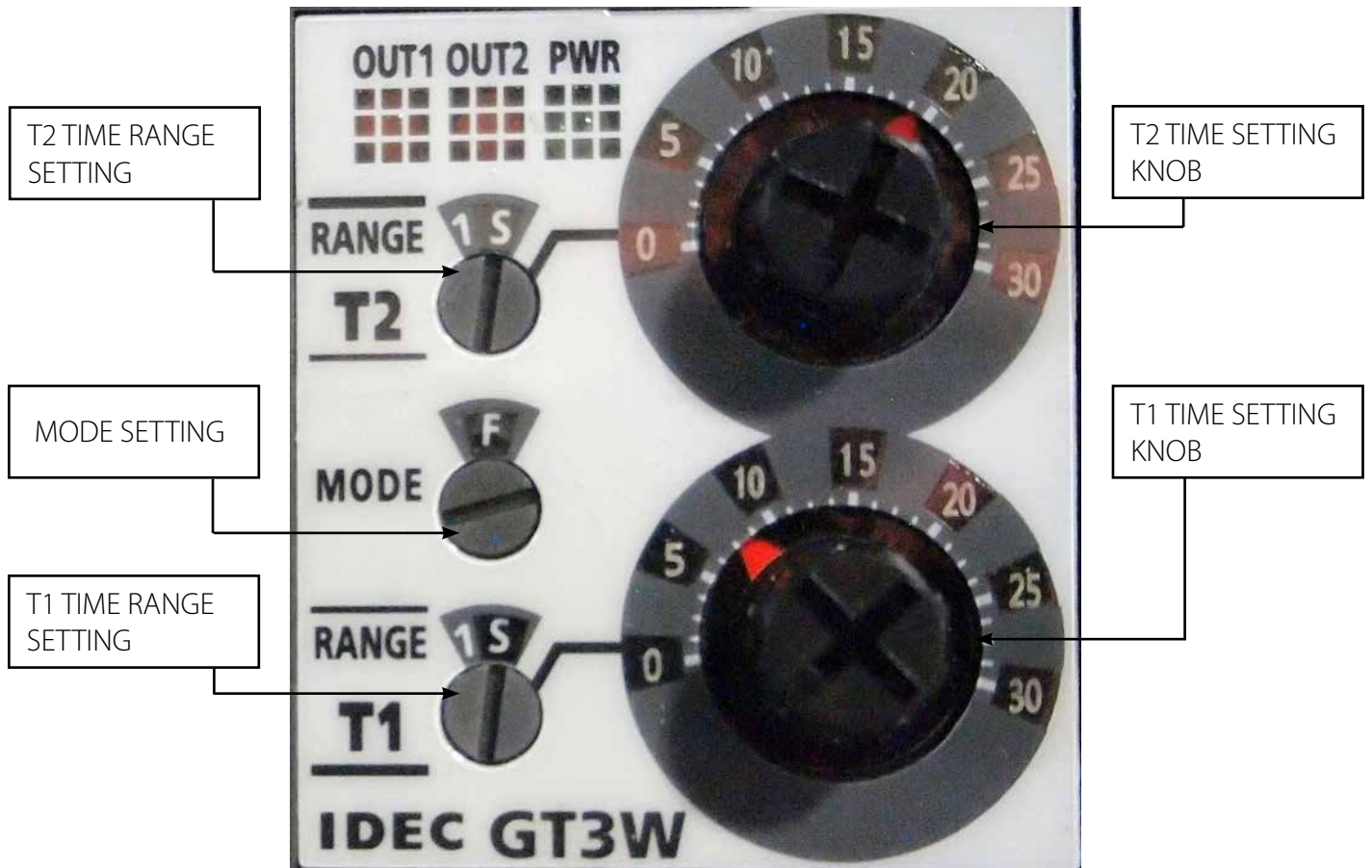
Setting the Spray Pressure

- The factory setting for the system spray pressure is at 80 psi. However, if the operator decided to increase or decrease the spray pressure, they can do so by adjusting the pressure relief valve shown in [2].

Note 3: Loosen jam nut before adjusting (see red arrow)



Timer Descriptions and Setting Instructions



Note 4: All power must be turned off before adjusting timer. The switches should be securely turned using a flat screwdriver 4mm wide maximum. Note that incomplete setting may cause malfunction. The switches, which do not turn infinitely, should not be turned beyond the limits.

Setting the Timer

- Set MODE to “E”
- Using the chart (Figure 1) adjust the T1 RANGE so that maximum time setting is as low as possible, but still longer than the total spray time
- Set T1 TIME SETTING KNOB to the proper setting for one belt revolution
- Using the chart (Figure 1) adjust the T2 RANGE so that maximum time setting is as low as possible, but still longer than the total off time
- The actual set time of T2 TIME SETTING KNOB is the total amount of time you want the system off between spray cycles when running in AUTO mode

TIME SPECIFICATION CODE: 3		
TIME RANGE SELECTOR	SCALE	TIME RANGE
1S	0 - 3	0.1 sec - 3 sec
1M		3 sec - 3 min
1H		3 min - 3 hours
1S	0 - 30	0.6 sec - 30 sec
1M		36 sec - 30 min
1H		36 min - 30 hours
10H		6 hours - 300 hours

Figure 1

Note 5: The scale is interlocked and replaced with the Time Range Selector. The time range is calibrated at its maximum time scale; therefore, it is desirable to use the timer at a setting as close to its maximum time scale as possible for accurate time delay.

Standard Control Box Component List

- Type 4X Polyglas enclosure (16 x 14 x 8) with a type 4X Clear HMI cover
- Rated E-Type Motor Starter for pump motor
- One (1) Solid state timer
- Three (3) Push button switches, NEMA 4, 30mm
- Two (2) Pilot lights, NEMA 4, 30 mm, (120VAC Green)
- Fifty (50) Watt panel heater with built-in thermostat
- Provision for remote operation
- Provision for an external thermostat

Remote Operation Setup

The following steps demonstrate how to tie the Cobra Deicing system to the plant's digital control system (DCS) for remote operation.

- Disconnect power to the unit
- Remove jumper from terminals 100 and 101
- Install and wire a Normally Open (N.O.) momentary contact push button to terminals 102 and 103
 - Label this switch START
- Install and wire a Normally Closed (N.C.) momentary contact push button to terminals 100 and 101
 - Label this switch STOP
- Install and wire a Normally Open (N.O.) momentary contact push button to terminals 102 and 109
 - Label this switch ONE SHOT
- Return power to the unit

Note 6: These switches will cause the same actions as the switches mounted on the control box

Purpose of External Thermostat

An external thermostat option will allow the system to run only below a preset temperature.

- Disconnect power to the unit
- Remove the jumper from terminals 108 and 109
- Install a Normally Closed (N.C.) – open on temperature rising thermostat outdoors so it can sense ambient temperature
- Connect it to terminal 108 and 109
- Set the OFF temperature on the thermostat to prevent cycling the machine when the temperature is above the set point
- A ONE SHOT cycle is still possible when the temperature is above the set point
- When the AUTO START button is pressed the system will enter the auto cycle, but will only run when the temperature is below the set point
- Return power to the unit

Note 7: Power must always remain on to provide power to the heater

Control Panel Indicator Lights

Four pilot lights will illuminate to show the status of the machine and its position in a cycle.

- PUMP RUNNING – Indicator light will lite when the pump is running
- AUTO CYCLE RUNNING – Indicator light will lite when the system is in the auto cycle mode



One Shot / Press and Go

Press the ONE SHOT button on the control panel.

- The system starts
 - Check if the PUMP RUNNING light is on
- The pump will run and the solenoid valve will open for the time set in T1
- T1 times out, the pump stops and the solenoid closes

Note 8: Press the STOP button will shut off the system at any time and close the valve

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Auto On / Off

Press the AUTO START button on the control panel to set the system in auto mode.

- The system will turn on and off base on the time setting on the control panel
- The system starts, the Auto Cycle Light is on, the pump runs, and the solenoid valve opens
 - Check if the PUMP RUNNING light is on
- The pump and solenoid valve will operate for the time set in T1
- T1 times out, pump stops and valve closes
- T2 counts down delay time
- This action will repeat after T2 times out

Note 9: Press the ONE SHOT button during the off cycle will cause a cycle to run and reset the off timer accordingly

Note 10: Press the STOP button will shut off the system at any time and close the valves. Operator will need to press AUTO START again to set the system back in auto mode.

Recommended Spray Frequency

Temperature	Equipment Idle Time
21.2 °F (-6 °C)	8 hours
17.6 °F (-8 °C)	4 hours
14 °F (-10 °C)	2 hours
6.8 °F (-14 °C)	50 minutes
0.4 °F (-18 °C)	40 minutes
-4 °F (-20 °C)	30 minutes
-14.8 °F (-26 °C)	15 minutes
-25.6 °F (-32 °C)	10 minutes

Storage - Long-Term

- Flush all pumps with water
- Clear all lines
- Isolate all the manual ball valves

For Technical Support Please Contact:

Application Center: 330.445.8135

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