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Welcome to the Nexteligence Newsletter!

Welcome to the second edition of the Nexteligence Newsletter. We will use this forum to announce the latest news in the Nexteligence training community.

In or Out? Tool Free Troubleshooting

Let's talk about the inputs and outputs that are used to control and operate the Heil® refuse collection vehicles. Not only do these signals entering in and being sent out of the Cortex Controller cause the functions of the truck to operate while also monitoring the unit for safe operating conditions, but these signals can also be used by the technician to troubleshoot and diagnose the unit before pulling the first tool out of the toolbox.

Let's look at what inputs and outputs are and how they can help us as

technicians pinpoint troubled areas of the unit without getting out of the comforts of the cab.

Inputs

First, let's discuss inputs. An input device such as a proximity switch, pressure switch, pushbuttons on the control panel, or even an all-electric joystick sends input signals to the Cortex controller. Keep in mind that input devices send messages to the Cortex controller and do not receive messages sent from the controller.

Outputs

Now let's talk about outputs and compare the two. Outputs are commands in the form of voltage signals sent from the Cortex controller to devices to tell them to turn on or off. Output devices such as lights, electric valve coils, or even pump coils are some examples of outputs.

Summary

Think about inputs and outputs like operating your computer. When you click the mouse button, the signal goes to the computer as an

input, is processed by the computer, and let's say the output desired is to open a spreadsheet or a document, the computer then processes the input of the mouse click and opens the document as the output. Your computer cannot do these tasks on its own without your input from the mouse or keyboard. The same is true with Heil refuse equipment. The Cortex controller (computer) is waiting for you to press the hopper light pushbutton so that it can turn on the hopper light. The pushbutton is the input, and when the Cortex sees this input, its function is to process the information and turn on the hopper light by sending an output of 12 volts to the light.

Diagnosing With Inputs/Outputs

The great news about inputs and outputs is that we can easily determine their on or off status on the Heil InSight™ display in the cab. Remember how I told you this is our number one tool, let me explain.

Sometimes it takes several inputs to turn on a single output. This can sometimes be confusing, but with the help of the Heil Service Manual for your unit type, this can be easily understood.

Let's take a look at a pump circuit as an example and determine which inputs must be on or off to turn on the pump coil. Also, when I stated earlier in this article that the Cortex monitors inputs and outputs for safety, it also displays the information that it is processing to the InSight display in a readable format for us to review during the troubleshooting process.

Navigating through each display in various unit types is different, and this information can also be found in the Heil Service Manual or by contacting your local Heil Dealer or the Heil Technical Support Team for help with navigating through the display screens.

Cortex Controller

The Cortex controller is a computer looking for its next command. Below is a written example in the Heil DuraPack® Python® Service Manual of what the Cortex program is looking for when we request to turn on the lift pump on a DuraPack Python.

A02 Side Door Closed Proximity Switch (Input %IX0.02)

This circuit monitors the ON/OFF status of the Side Door proximity switch. The Side door should always be in the Closed position (ON). If the side door is open, the hydraulic pump and packer will be turned OFF. The side door is opened only for servicing/maintenance purposes.

C10 Lift Pump (P1) (Output %QX0.14)

This output function controls Hydraulic Pump (P1), the Lift Pump

Parameters	Default Setting	Range
Lift Operating Speed	7 MPH	1 to 12 MPH

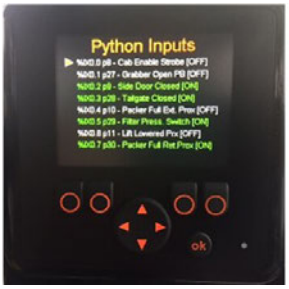
Conditions necessary to activate the circuit

Condition	Logic	Function or Component	Status	I/O Address	Status
A	-	System Power Switch	Activated	%IX0.15	ON
	AND	Hydraulic Pump Enabled PB	Activated	%IX0.04	ON (momentary)
AND					
B	OR	Chassis Service Brake	Applied	%IX2.04	ON
C	OR	Chassis Transmission	In Neutral	%IX1.04	ON
D	OR	Pump 2 Solenoid	Activated	%QX0.2	ON
Note: With conditions (A) true, conditions (B) OR (C) OR (D) will engage the pump within the speed parameter					

You can see the parameters that must be within the specifications listed are what is necessary to turn on the lift pump. Notice the note that the side door prox must be on (door closed) for the hydraulic pump(s) to be operational.

The speed of the chassis must be within the setpoint listed. In this case, it is 7mph or lower.

- A - The speed of the chassis must be within the setpoint listed. In this case, it is 7mph or lower.
- A - The system power switch must be ON, and the pump pushbutton must be pressed to initiate the command to turn on the pump.
- B, C, or D - One of the “OR” conditions must take place for the P1 lift pump to turn on. Either the service brake must be pressed “OR” the transmission is in neutral “OR” the pump 2 solenoid is on.



By verifying that each one of these inputs are correct on the InSight display, the technician can often locate the problem before ever checking the hydraulics or disconnecting electrical connections.

For example, if you are trying to turn the lift pump on the DuraPack Python and you look at your inputs for the pump, enable the pushbutton to activate, if you were to press the pump pushbutton and it does not change to the “ON” status inside the InSight display, you have found the problem and should investigate.

You could have an inoperable button or a broken wire that is not allowing the signal to make it to the controller. The same is true with the other parameters. If you are pressing the service brake with your foot and the input does not show that the service brake is active, you could have a broken wire or maybe even a faulty brake pressure switch.

Learning to use the InSight display and the Heil Service Manual to verify the required inputs for output activation is invaluable when troubleshooting and repairing your Heil refuse collection vehicle.

Contact Info & Helpful Links

Nexteligence Class Registration

Feel free to contact us anytime if you have any training questions or to register for one of our training classes.

Email Training

2023 NexteligenceTraining Schedule

Our 2023 Training Schedule is now available and can be viewed via the Nexteligence Training webpage, as well as the Heil Dealer Portal.

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Service Shack

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