

Quick Start Guide



E-Z TEC[®] DSP METAL DETECTORS

ERIEZ MAGNETICS HEADQUARTERS: 2200 ASBURY ROAD, P.O. BOX 10608, ERIE, PA 16514-0608 U.S.A.
WORLD AUTHORITY IN ADVANCED TECHNOLOGY FOR MAGNETIC, VIBRATORY and METAL DETECTION APPLICATIONS

Introduction

This Quick Start Guide provides the minimum information necessary for setup and operation of your E-Z Tec® DSP Metal Detector. The detector, including a conveyor and reject, if provided, will arrive from Eriez as ordered for your specific application. However, in almost all cases, 'fine tuning' of the system at your site can improve detection and rejection of contaminated product while reducing the loss of good product. Therefore, we strongly advise that you consult the E-Z Tec DSP Metal Detector Installation Operation and Maintenance (IOM) Manual (MM-241) provided with each unit. The IOM provides a detailed description of the capabilities and operating procedures of the E-Z Tec DSP Metal Detector.

⚠ CAUTION: Safety labels must be affixed to this product. Should the safety labels be damaged, dislodged or removed, contact Eriez for replacement.

Installation

Unpacking and Handling

Before unpacking, examine the shipment thoroughly and note any damage. If there is any damage, please report it immediately to the carrier and Eriez. When handling the detector, follow the “Metal Detector Handling Instructions” placard attached to the equipment crate or the metal detector itself. Never insert anything into the detector aperture to lift the equipment!

Installation

The normal installation, input and output requirements for the E-Z Tec DSP Metal Detector are described in the following sections. For complete installation requirements and cautions please refer to the IOM.

If you purchased an integrated Metal Detector and Conveyor/Reject System from Eriez, the auxiliary equipment will be wired to the detector. Please ensure that the conditions outlined in Table 1 are met, and that clean air and power are provided as specified on the system control or junction box (see Figure 1). For vertical reject systems, the reject air solenoid must be wired to the control.

If you purchased a stand-alone E-Z Tec DSP Metal Detector (without a reject system) you should provide a reject or alarm system compatible with the detector specifications to notify you when metal has been detected and to assist you in removing contaminated product. If you require assistance in designing such a reject or alarm system please contact Eriez.

For an integrated system:

- Make electrical connections within the control or junction box mounted on the conveyor or on the supporting structure for the supplied system.
- If required, make air supply connections as indicated on the system outline drawing; verify that the air supply meets the requirements specified. Unless otherwise specified, 90 psig (6 bar) of air is required.
- Metal detector relay connections to the reject device will normally be supplied complete by Eriez, including power to the relays. Thus, you need only supply external power as specified.

TABLE 1

Operating Ambient Temperature	-10°C (14°F) to 45°C (113°F)
Storage Temperature	-10°C (14°F) to 80°C (175°F)
Atmosphere	Non-corrosive and non-combustible at all times (unless equipment was ordered and supplied to alternate specification)
Relative Humidity	0 to 95%
Vibration	Excessive vibrations may be sensed by the metal detector. Do not remove any vibration absorbing mounts provided by Eriez.
Electromagnetic Energy	The metal detector operation may be affected by variable frequency drives (VFD's), two-way radios, etc.
Detector Enclosure Rating	NEMA 4X / IP66
Supply Voltage and Power	Automatically adapts to 100 VAC to 250 VAC, 50 to 60 Hz, 60 VA.
Electrical Connection	Dedicated line to the main power bus, including a reliable ground to the “GND” terminal in the detector or system junction box. The metal detector is to be grounded at this point only.
Product Velocity	2 ft/min (.6 m/min) to 7800 ft/min (2400 m/min) depending on aperture size

Installation (cont.)

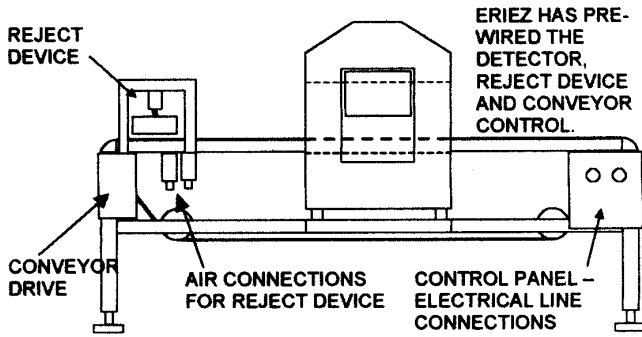


FIGURE 1

For installation of a stand-alone E-Z Tec DSP Metal Detector, see Figure 2 and Eriez Drawing 3R9936358 (see Figure 5).

- Remove the detector control panel for access to the control bay.
- Bring power leads into the control bay through a knock-out port in the bottom of the bay.
- Make electrical connections within the detector control bay, as shown in Figure 2.
- Note that the metal detector output relays provide power at the input voltage supplied to the detector and are limited to 5 amps output by fuses. If your reject system requires additional power, you must supply it via an external relay or contactor.
- Do not directly connect rigid conduit to the metal detector head.

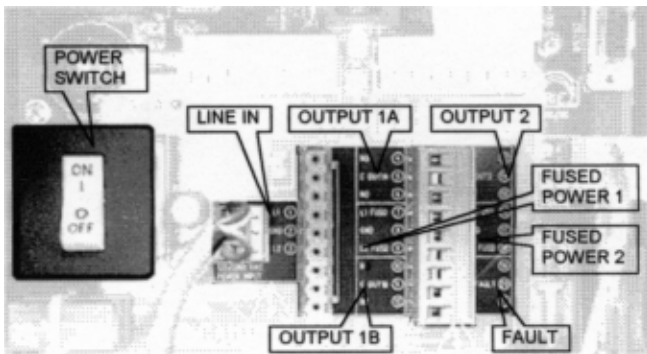


FIGURE 2

Metal-Free Area

The installation should comply with the specified metal-free area shown in the outline drawing that accompanies the detector. For guidance, or if no metal free area is shown in the outline drawing, Figure 3 illustrates the normal recommended metal-free area. Moving and stationary metal should be excluded from the shaded area. Additional distance may be required for large moving metal objects.

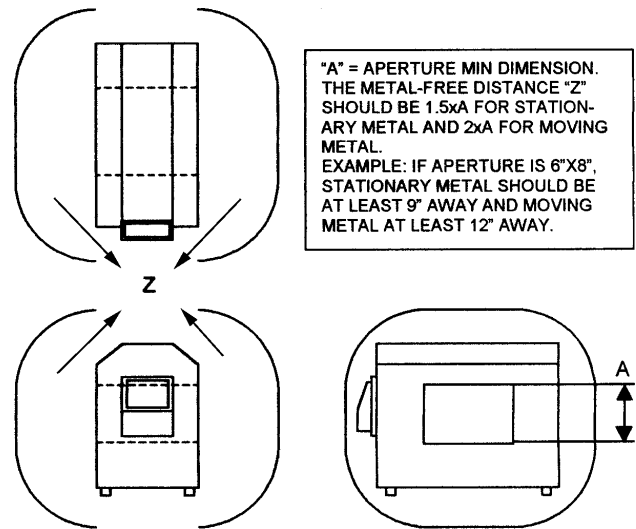


FIGURE 3

Operation

Initial Operation

If the detector has been stored at or below 0°C (32°F) for more than six hours, the unit should be allowed to stabilize at room temperature (at least overnight) to allow any condensation that may have accumulated on the electronic components to dry prior to use. Do not apply power until electronic circuitry is completely dry.

When power has been run to the metal detector, it is ready for use. CAUTION: Reject devices may actuate when power is first applied. To avoid serious personal injury or equipment damage, the area around reject devices should be clear of obstructions and personnel prior to application of power.

Turn the Detector On

Verify that the internal power switch is ON. Apply electrical power to the metal detector system.

Check the Initial Touch-Screen Displays

When power is applied, a series of code numbers will appear on the screen as the detector goes through a self check procedure (approximately 10 seconds). After the self-check, the screen will display the Monitor Menu (see Figure 4) and the message 'Please Wait' will appear at the top of the screen.

Once the 'Please Wait' message disappears, the touch screen will become active and the detector will be operational.

Remove power from the detector if:

- The code sequence does not appear or the display is garbled.
- The Monitor Menu shown in Figure 4 does not appear.
- The detector signals a detection repeatedly or the reject device actuates repeatedly with no metal in the metal-free zone.

If the problem occurred when first applying power, remove power and check the installation thoroughly, particularly the supplied voltage and frequency. Re-apply power after assuring that the installation is correct. If the problem re-occurs, disable the power and contact Eriez for assistance.

Set Up the Detector for Your Product

1. At the Monitor Menu, select **Product**.
2. Press **PW** in lower left corner and enter 3333 for the engineering level password.
3. Press **Speed** and enter product speed in feet per minute, press **Enter**.
4. If a conveyor will be used for the auto setup, turn it on.
5. Press **Auto Setup**. NOTE: Keep hands and other items away from aperture at this time.
6. Wait for the metal detector to set up.
7. Press **Start** and pass the product through the aperture. NOTE: The detector should not beep before the product enters the aperture. If it does, press the back button and repeat this step.
8. After product passes through aperture, press **Stop**.
9. After the screen updates, press **Accept**.
10. Repeat steps 7 & 8. Make sure that the product is fed in the same orientation as in the first pass. If Old settings are similar to New Settings when the screen updates press **Cancel** instead of **Accept**; if Old and New settings differ significantly, press **Accept** and repeat this loop.
11. In the product menu, press **Reject Setup** and follow the displayed script.

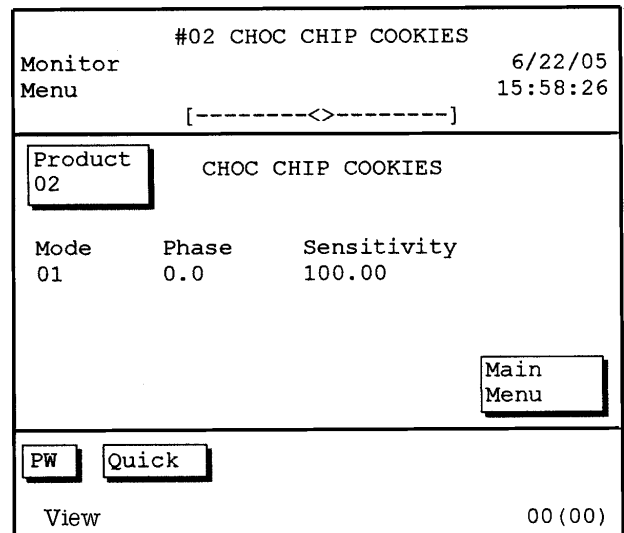


FIGURE 4

Operation (cont.)

Verify Detection Capability

Using the test spheres supplied with the detector and/or samples of the metal you desire to detect, verify that they are detectable. Pass the metal through the aperture of the detector at a speed and in the direction that metal is expected to pass through during normal operation. Do not bring your hands close to the aperture while performing this test, this will cause a false detection. The detector will respond with 'Detect' and 'Reject' indications while the test metal is passing through the aperture.

Verify Reject Action

If the detector is set to activate an alarm upon detection, verify that the alarm properly activates. When the detector is set up to stop the conveyor, verify that the conveyor stops upon detection. If present, verify proper operation of the reject mechanism. Pass representative metal-contaminated product and uncontaminated product (clearly identified) through the detector using the conveyor system at normal production speeds. Verify that the contaminated product is detected and that the reject device operates at the correct time and with the correct action to remove the metal from the product stream.

Put the System into Operation

Place the E-Z Tec DSP Metal Detector into production with its associated conveyor/reject system. Monitor the performance of the detector closely for several shifts to ensure that the system functions properly.

Adjustments

Adjustments to the operation of the E-Z Tec DSP Metal Detector are made at the touchscreen control panel. A password is required to adjust most parameters. As shipped, the Operator password is 1111, the Supervisor password is 2222, and the Engineer password is 3333.

If the detector/reject system needs to be adjusted, we strongly recommend that you review the E-Z Tec DSP Metal Detector Installation, Operation and Maintenance (IOM) Manual (MM-241) for detailed information on the purpose and procedures associated with each of the adjustable operating param-

eters. A brief discussion of each of the most commonly adjusted parameters is given below:

Sensitivity

The Sensitivity controls the ability of the metal detector to detect metal. The range is 00 to 250, with the metal detector most sensitive at a setting of 250. After an automatic setup is run the Sensitivity will be set at 100. If the detector is not responding to metal particles of the desired size, increase the Sensitivity slightly. If the detector experiences excessive false detects, decrease the Sensitivity slightly. After any reduction in Sensitivity, verify that the target metal particles are still detected reliably.

Phase

This adjustment is used to prevent the metal detector from detecting the product under inspection. Its use is described in detail in the IOM. It should be adjusted only via the automatic product setup procedure or after consulting the IOM or Eriez.

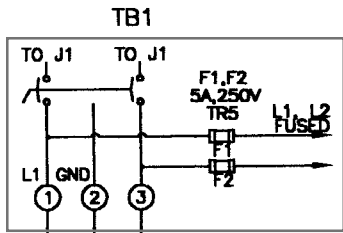
Detect Mode

The metal detector has two detect modes, 1 and 2. Detect mode 1 enables the metal detector to operate at optimum performance and is used only when static electricity is not present in the environment. Detect mode 2 is used where false tripping may occur due to unfavorable environments such as static discharge in the vicinity of the metal detector.

Reject Timing

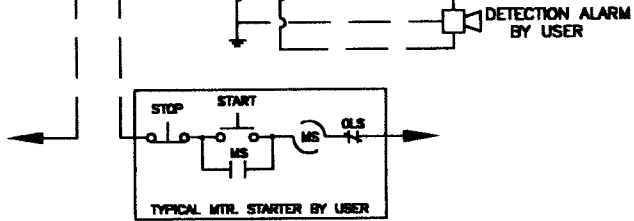
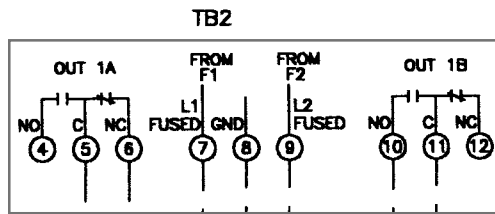
Many parameters control the timing (initiation and duration) of the detect signal sent to the reject relays. If your system is properly rejecting contaminated product, no changes are required. Modifications are needed only if the conveyor speed changes or if the nature of the product changes (size, shape, orientation, spacing). As with the other adjustable parameters, it is important to verify proper reject timing after any adjustment.

INPUT POWER CONNECTIONS



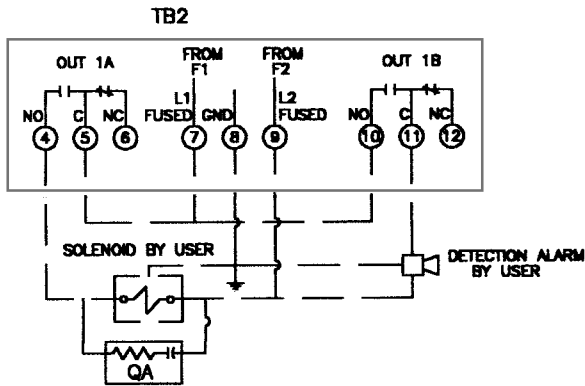
EZ TEC DSP INPUT POWER
DEDICATED CIRCUIT
100 TO 250VAC
50/60 Hz
TYPICAL FOR ALL APPLICATIONS

**USER BELT STOP HOOK-UP
WITH DETECTION ALARM**




FOR BEACON OR HORN OR BOTH
PUT N.O. E-Z TEC CONTACT IN
SERIES WITH DETECTION ALARM
POWER CIRCUIT.

**USER REJECT SOLENOID WITH DETECTION ALARM
TOTAL ELECTRICAL LOAD LESS THAN 5 AMPS**



FOR REJECT SOLENOID PUT N.O.
E-Z TEC CONTACT IN SERIES WITH
SOLENOID POWER CIRCUIT.

NOTES:

- 1) POWER SOURCED FROM 7,9,16 AND 18 LIMITED TO A COMBINED MAXIMUM OF 5 AMPS.
- 2) REJECT & ALARM DEVICES TO BE POWERED FROM THE INTERNAL SOURCE MUST BE RATED TO OPERATE AT THE SAME VOLTAGE AS THE INPUT VOLTAGE SUPPLIED TO THE E-Z TEC DSP.
- 3) ALL DETECTION OUTPUT CONTACTS ARE RATED 277 VAC MAX.
- 4)  0.01uF 600V/39ohm RC NETWORK INSTALLED ACROSS SOLENOID TO REDUCE FALSE TRIPPING THE METAL DETECTOR
- 5) ALL WIRING MUST COMPLY WITH LOCAL AND NATIONAL STANDARDS. CONSULT WITH A LICENSED ELECTRICIAN FOR GUIDANCE.

**USER REJECT SOLENOID WITH DETECTION ALARM
TOTAL ELECTRICAL LOAD MORE THAN 5 AMPS.
USE CONTACTOR OR RELAY TO ACTIVATE REJECT DEVICE.**

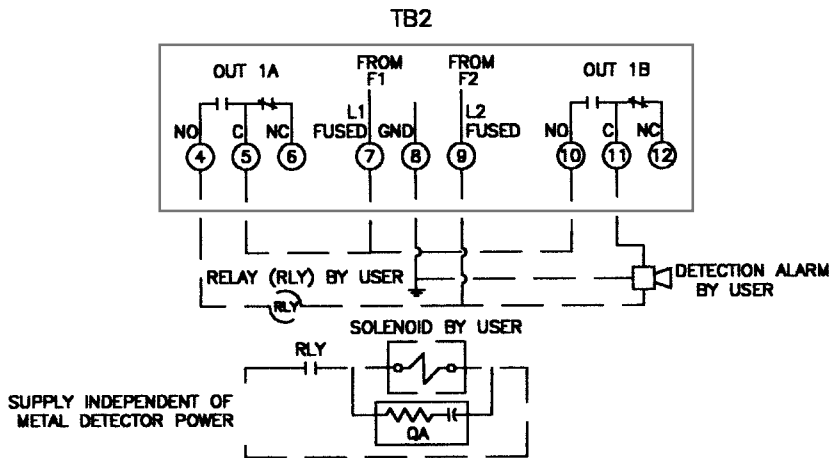


FIGURE 5

Operation (cont.)

Continued Operation

Normally, the detector should be left ON continuously. This will extend the life of the electronic components and eliminate warm-up effects, as well as eliminating the chance that the production line might operate inadvertently without inspection. Because it is a quality control device, the detector should be checked at least once per working shift to verify that it is operating correctly. It is good practice to pass a representative metal sample or the provided test pieces through the detector at these times and log the result, making appropriate adjustments if the metal is not detected.

It is good practice to review the record of detections stored in the metal detector at least once per shift. This will verify that the metal detection rate has not changed unexpectedly. An abnormally high rate may indicate equipment wear or product contamination upstream of the detector or electromagnetic interference. If a conveyor belt carries product through the detector, an abnormally high detection rate may indicate that metal has become embedded in the belt.

Maintenance

Periodic Maintenance

Your E-Z Tec DSP Metal Detector is a solid state electronic device, and will operate reliably with little or no maintenance. The most critical maintenance step is to thoroughly review the E-Z Tec DSP Metal Detector Installation, Operation and Maintenance (IOM) Manual (MM-241). The IOM provides principles of operation, steps for optimizing performance and procedures for on-going maintenance.

Required periodic maintenance for conveyors and/or reject devices supplied by Eriez will be specified on the system outline drawings and/or on placards attached to the components themselves. For the typical system, check the following at least once per 40-hour work week:

- conveyor and drive belts for tension, alignment and condition,
- bearings for lubrication, metal contamination and wear,
- air supply for pressure and moisture trap condition,
- support frame for loose connections, rust and wear from belt contact,
- conveyor belt slider bed condition, including wear and embedded metal and
- all operating mechanisms (reject pusher arms, gates, chutes, etc.) for condition and timing of operation.



World Authority in Advanced Technology for Magnetic, Vibratory and Metal Detection Applications

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