MM-251

Installation, Operation and Maintenance Instructions

ERIEZ®

METALARM 6600 CE METAL DETECTION SYSTEM

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 manual details the proper steps for installing, operating and maintaining the Metalarm 6600 CE Metal Detection System.

Careful attention to these requirements will assure the most efficient and dependable performance of this equipment.

If there are any questions or comments about the manual, please call Eriez at 814/835-6000 for Metal Detector assistance.

⚠ CAUTION: Metal Detectors emit electromagnetic fields. Contact the American Conference of Governmental Industrial Hygienists, Cincinnati, Ohio, U.S.A. (www.acgih.org) for additional information.

⚠ CAUTION: If you use a medical implant or similar device, you must never approach the equipment because your device may malfunction in the electromagnetic field, with consequences up to and including death.

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

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METALARM 6600 CE METAL DETECTION SYSTEM

Installation

GENERAL DESCRIPTION

The Metalarm 6600 CE has been developed primarily for the Plastics and Rubber Processing Industries to prevent metal from entering granulators and other molding machinery.

The Metalarm 6600 CE can be installed on a conveyor, around non-metallic pipes, under slides and in many other special configurations.

CONTROL UNIT MOUNTING

The Control Unit should be mounted in close proximity to the search coil on the conveyor, using the two mounting holes on 9 7/16" (240 mm) centers. (See Figure 1).

PLEASE NOTE: To comply with 'CE' EMC regulations, the control unit must remain mounted on the HDPE mounting plate provided. This electrically isolates the control unit from the conveyor frame.

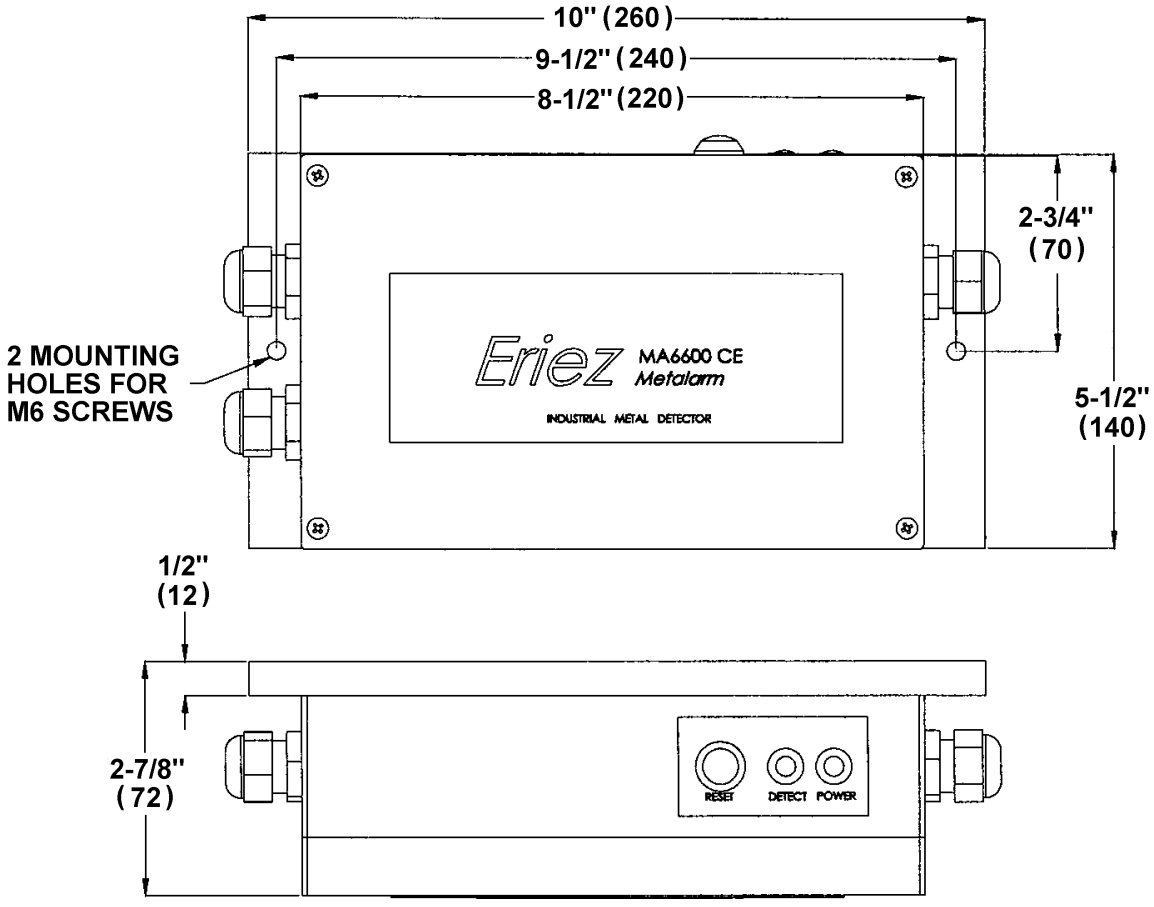

FIGURE 1

Installation (cont.)

SEARCH COIL MOUNTING

The search coil should be installed as shown in Figure 2.

A cut out should be made in the base of the conveyor 2" (50 mm) longer than the search coil, the search coil then being mounted in the middle of the cut out. There should be no moving metal beneath the position where the search coil is to be mounted.

The search coil should be mounted such that the conveyor belt passes over the plain surface of the coil, with the resin side facing down.

The search coil can be held in position by use of brackets at each of its four corners, or by drilling through the sides of the conveyor into the sides of the search coil, never nearer than 2" (50 mm) from the search coil windings.

Before mounting the search coil make sure that the search coil connector is orientated such that the search coil cable is plugged into it, and that the cable comes out the same side of the conveyor as the control unit is located.

If this is not the case, the coil socket can be rotated 180° by removing the four screws holding the connector to the search coil and rotating the connector 180° and replacing the screws.

It is recommended to use a PG11 plastic gland to take the coil cable through the side wall of the conveyor. This will require an 23/32" (18.5 mm) hole.

If the side walls are metal and are not rigid, they may have to be replaced with non-metallic ones.

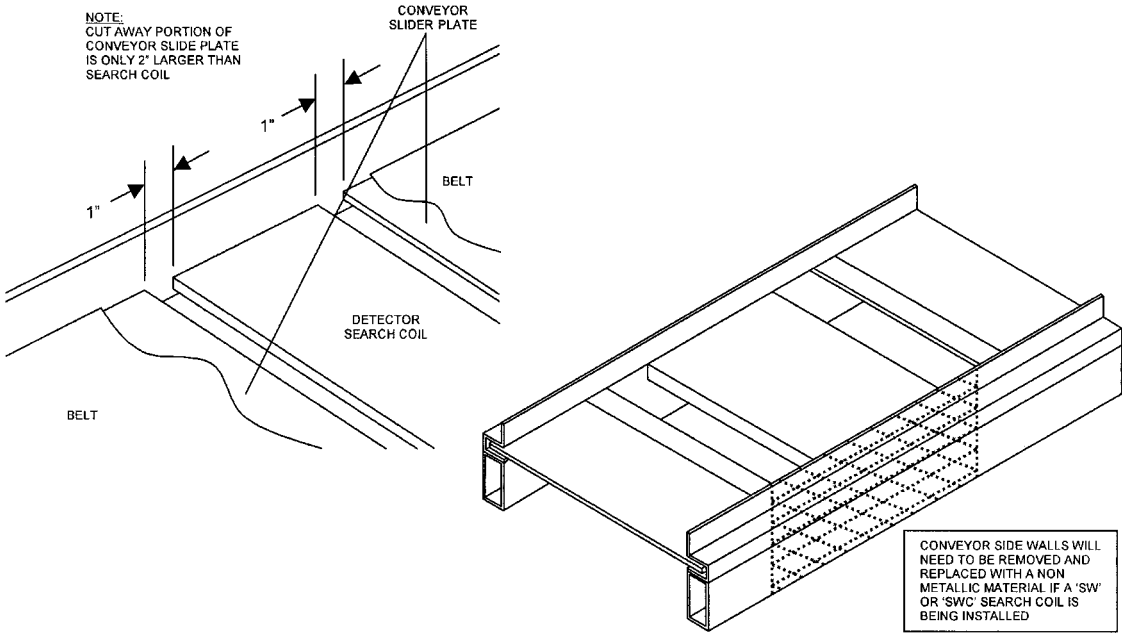

FIGURE 2

Installation (cont.)

ELECTRICAL CURRENT LOOPS

The most frequent problem encountered in metal detector installations is false tripping caused by unsteady electrical current loops. The fringing electromagnetic field dissipates in strength with distance to a point that metal outside the “metal-free” area will not cause false detections. Since the field is time varying, it will generate small electrical currents in conductive paths (i.e., metalwork) quite some distance from the aperture, even beyond the nominal metal free area. These currents, and ground currents from other nearby equipment, will not cause false detection as long as they are constant. If the current is disrupted, however, the resulting electromagnetic disturbance may cause the metal detector to false trip.

The schematic diagram shown in Figure 3 provides a simplified view of a typical metal detector and conveyor. The arrows represent electrical currents.

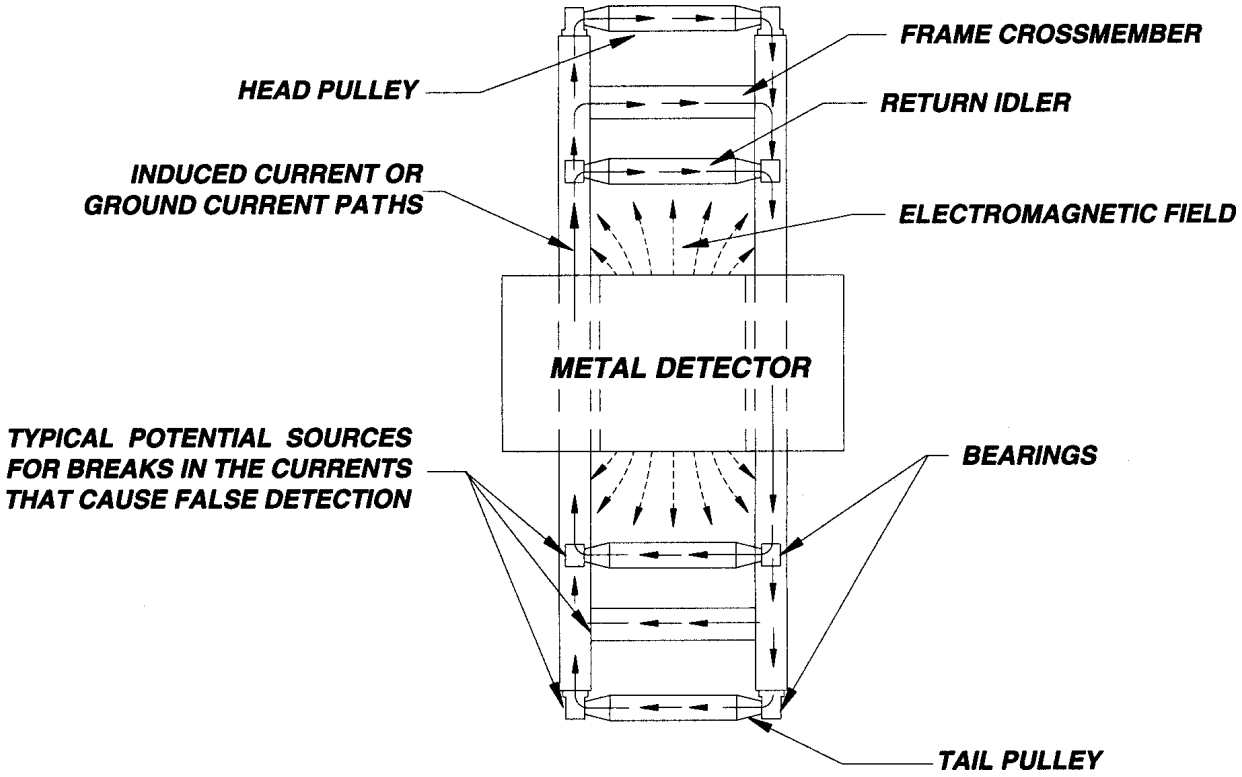

FIGURE 3

Installation (cont.)

As the bearings supporting the pulleys and idlers turn, they make and break contact with their respective races. Likewise the cross-members of the conveyor framework represent possible break points. Over time, these connections can work loose or corrode and may make and break the electrical connections due to vibration. The interruption or change, of the current is a source of electromagnetic interference detectable by the metal detector.

ELECTRICAL CONNECTIONS

Refer to Figure 4. Remove the cover of the detector by undoing the four screws.

LINE CONNECTIONS

Check that the line voltage select or switch, SW1, is in the appropriate position for the voltage supply available, either 110V or 230V - 50Hz or 60Hz.

A cable for the mains supply is connected to TB1, hot to Pin 1 and Neutral to Pin 2 via the cable gland provided.

Note the line ground (earth) cable must be taken to the ground (earth) terminal within the enclosure.

MAINS FUSE (FU1)

The fuse is mounted in the holder along side TB1 and is rated at 1.0 Amps for 110 VAC operation and 0.5 Amps for 230 VAC operation.

Spare fuse is held in holder (FU2).

SEARCH COIL CONNECTION

The Metalarm 6600 CE is supplied with a cable to connect to the search coil to the control unit.

The cable is connected to TB3, ground (outer conductor) to Pin 1 and signal (center) to Pin 2.

CONTROL RELAY CONTACTS

Two sets of relay contacts are provided, one for releasing the conveyor motor contactor and the other for remote alarms. The contact rating is 240V 5 A max. These contacts are available at terminal block TB2.

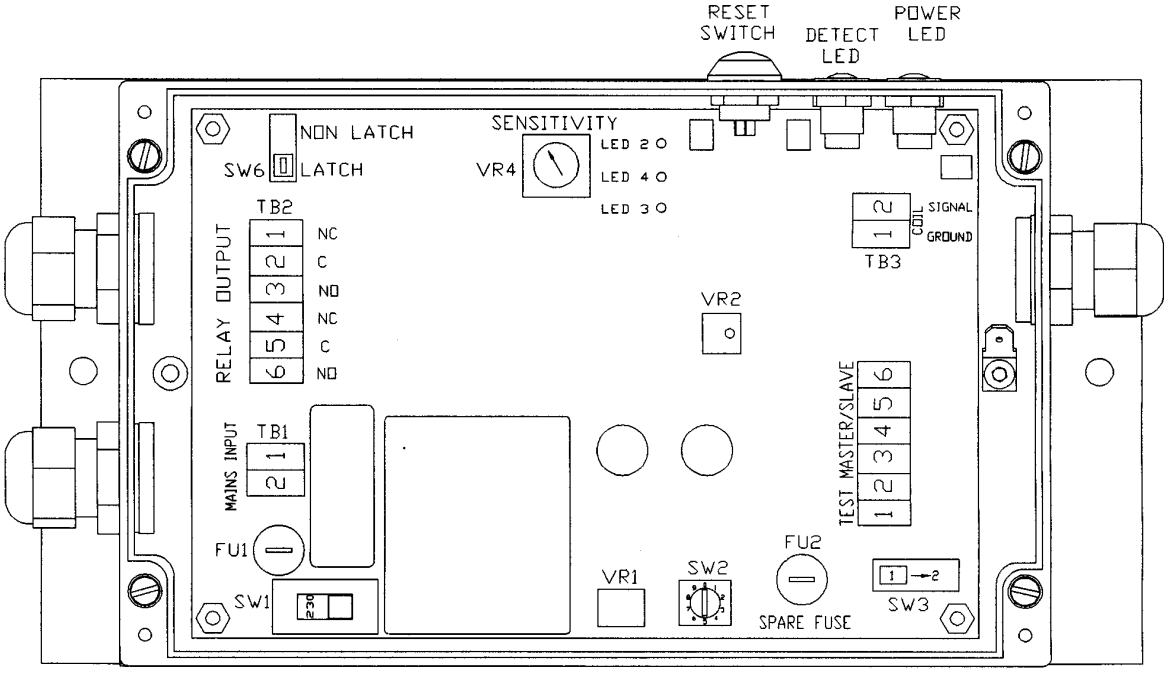

FIGURE 4

Operation

⚠ WARNING: Please note that when metal is detected and the conveyor has stopped, the area above and on either side of the search coil should be searched for the presence of metal and once found, removed from the conveyor belt.

As an added precaution all product present on the belt in the search area should be pushed back to a position such that it will pass over the detector again. Only at this point should the metal detector "RESET" button be pushed and the conveyor restarted.

If this procedure is not followed there is a danger that metal can be missed by the metal detector.

GENERAL OPERATION

In normal operation, the control unit is monitoring the search coil and if any metal passes over the coil, the red lamp on top of the unit will illuminate. Also, the relay will de-energise and stop the conveyor.

When the metal has been removed from the conveyor the reset button beside the lamp can be pressed to extinguish the lamp enabling the conveyor to be restarted.

COIL FAULT

The control unit continually checks the condition of the search coil. That is, if the coil is not connected to the control unit or if in operation it becomes open circuit or short circuit then the red lamp on top of the unit will illuminate as a warning.

Also, the relay will de-energise to stop the conveyor and prevent operation until the coil fault is rectified.

'LATCH' OR 'NON-LATCH' OPERATION

Normally the detector is supplied with the electronics arranged such that the detector 'latches' on detection of metal, ie. the relay remains released until reset by the 'reset' switch on the face of the detector.

If it is required for the detector only to provide a signal for the period of time that the metal is over the search face of the detector, the detector should be run in the 'non-latch' mode. This is achieved by switching the DIP switch SW6 to the top position, see Figure 3 (on previous page) for the position of the switch on the printed circuit board.

ADJUSTMENT

Switch on the supply to the detector and after approximately two seconds the detector is ready for use.

Examine the LEDs 2,3 and 4 installed to the right of the Sensitivity Control near the top-center of the circuit board. If LED 4 (Green) is illuminated then no further adjustment is required. If LED 3 (Red) is illuminated then adjust VR2 counter-clockwise until LED 4 (Green) illuminates. Conversely if LED 2 (Red) is illuminated then adjust VR2 clockwise until LED 4 (Green) is illuminated.

NOTE: VR 2 is located within the square shielded area. Remove the lid of this box, VR2 is located on the bottom edge. Use the supplied tool to adjust VR2.

If the red "Detect" lamp is now on, then press the reset switch next to the red "Detect" lamp to reset the unit.

Operation (cont.)

SENSITIVITY

The sensitivity can be adjusted by means of VR4 “Sensitivity” as shown on the p.c.b. layout drawing as in Figure 3. Fully clockwise is maximum sensitivity.

The Metalarm 6600 CE Metal Detectors are shipped with average settings of sensitivity. If higher sensitivity is required please contact Eriez.

OPERATIONAL CHECK

The operation of the detector can be checked by passing a piece of metal over the search coil and checking that the red “Detect” lamp mounted on the detector illuminates.

When in the ‘latch’ mode, the “Detect” lamp will remain illuminated until the reset button is pressed. In the ‘non latch’ mode the “Detect” lamp will only illuminate when the metal is passed over the top of the search coil.

Note that after the reset switch is depressed there is a two second delay before the unit is active again. When the detector is operating satisfactorily, replace the lid and tighten the four lid screws.

Troubleshooting

Should the detector not operate as described, please contact your local service agent for assistance. When this is not possible, please contact the Service Department at Eriez Magnetics.

Telephone: 814-835-6000
Fax: 814-838-4960
E-mail: eriez@eriez.com
Web: www.eriez.com

Spare Parts

ITEM	DESCRIPTION	PART NUMBER
Reset switch	Push switch sealed	816563
Detect LED	Panel mounted LED Red 12V	819561
Power LED	Panel mounted LED Green 12V	819562
Gland	PG11 Cable gland (plastic)	819563
Relay	DPCO PCB Mount Relay	819564
Fuse*	1.0 Amp 5x20 mm Slo Blo	819647
Fuse*	0.5 Amp 5x20 mm Slo Blo	816201
PCB Complete	MA 6600 PCB	819565
Coil Cable	3-Feet (1 meter) interconnecting cable	817588
MA Plug	Male cable connector	818213

*Refer to Section 3 - Line Fuse for proper fuse to be used with a specified line voltage.

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