

INTERNAL USE ONLY

# Collision Avoidance Device

Installation Guide, 466D911.IG

IS-4000 Collision Avoidance Device, 466D911

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# 1 Introduction

## 1.1 Purpose

This document provides instructions and clarifications on how to properly install and adjust the Collision Avoidance Device (466D911).

## 1.2 Scope

1. Work Preparation
2. Tools Required
3. Installation & Adjustment Steps
4. Control, Function, & Resetting

## 1.3 Assumptions

1. The Collision Avoidance Device Assembly is 466D911.
2. 466D911 has been pre-assembled by Danville manufacturing and shipped complete to the customer site.
3. 466D911 needs on-site adjustment for fixing activation position and PLC code implementation for functional operation and communication.
4. 466D911 requires resetting after collision activation with operator intervention.

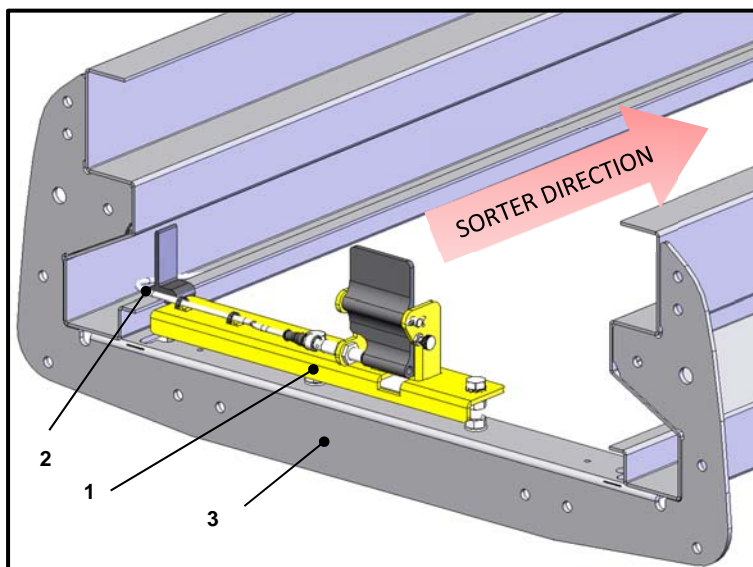
## 1.4 Resources

1. Intelligrated assembly drawing 466D911.
2. Code of Federal Regulations, 29 CFR 1910.147 and ANSI Z244.1.

## 1.5 Safety Requirements

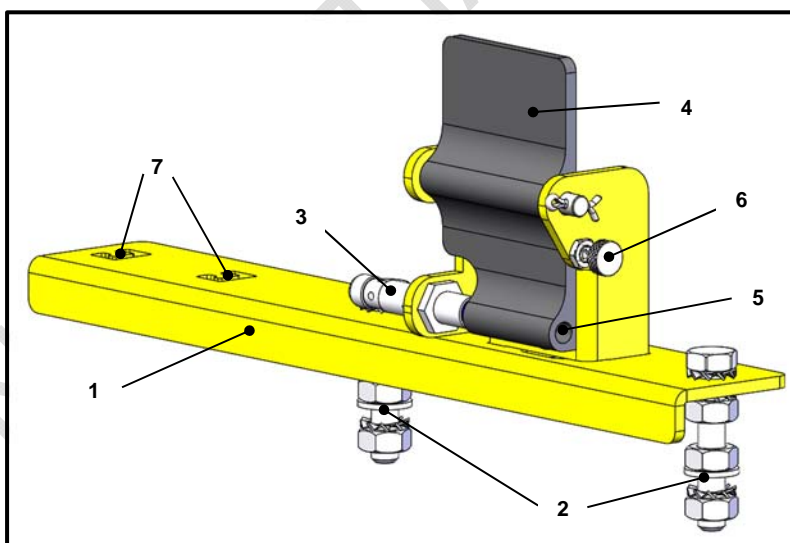
1. **Lock Out/Tag Out** procedure to be performed per Code of Federal Regulations, 29 CFR 1910.147 and the minimum safety requirements outlined in the current publication of the American National Standard Institute's Control of Hazardous Energy - Lockout/Tagout and Alternative Methods (ANSI Z244.1).
2. Use all PPE per site and/or safety requirement/guidelines.
3. Comply with all Honeywell Intelligrated and other site specific safety rules.

## 1.6 Hardware Description



**Figure 1-1 Collision Avoidance Device (466D911) Mounted in Section**







1	Collision Avoidance Device Assembly	3	Sorter Section Flange
2	I/O Homerun Cable		



**Figure 1-2 Collision Avoidance Device (466D911) Components**

1	Mounting Bracket	5	Embedded Steel Pins (Sensor Trigger)
2	Jacking Screw Arrangement	6	Reset Plunger
3	Inductive Proximity Sensor	7	Cable Tie-Downs
4	Activation Paddle		

## 1.7 Tools Required

Torque wrench capable of setting 47 Nm (436D114 from customer toolbox can be used for this purpose)	
17mm Deep Well Socket (436D089 from customer toolbox can be used for this purpose)	
17mm Combination Box Wrench (161A251 from customer toolbox can be used for this purpose)	
(2x) 18mm Combination Box Wrench	
Metric Feeler Gauge Set (436D097 from customer toolbox can be used for this purpose)	
Cable Ties	



## 2 Installation & Adjustment

### 2.1 Prepare Sorter

1. Lock Out / Tag Out Sorter as described in [Section 1.5](#)
2. Remove all Bottom Covers necessary to access the location of the Pre-Collision Detection Device (*if the sorter is to be accessed from the bottom side*)
3. Remove all Carriers and Carts necessary to access the Pre-Collision Detection Device (*if the sorter is to be accessed from the top side*)
4. Ignore this paragraph if the sorter has not been carted yet

### 2.2 Locating the Collision Avoidance Device

The Collision Avoidance Device needs to be located approximately 12 meters upstream from its associated Linear Synchronous Motor (LSM). This allows adequate sorter stopping distance after activation. The Collision Avoidance Device attaches directly to a sorter section flange as shown in Figure 2-1.

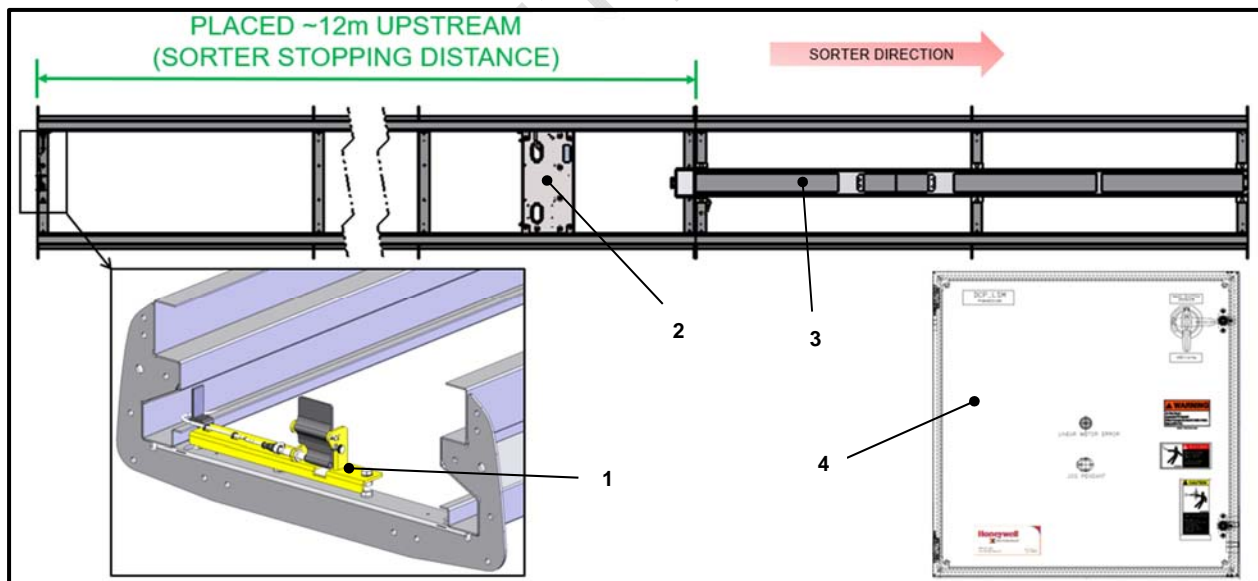


Figure 2-1 Collision Avoidance Device (466D911) Location

1	Pre-Collision Detection Assembly	3	LSMxx
2	LSMxx I/O Cabinet	4	DCP_LSMxx

## 2.2.1 Installing the Collision Avoidance Device

The Collision Avoidance Device must be installed to the correct height for proper operation.

### Install the Assembly.

1. Loosen and remove the two M10 Nuts (A) and M10 Tooth Washers (B) leaving the rest of the Jacking Screw Arrangement as shown in Figure 2-2.

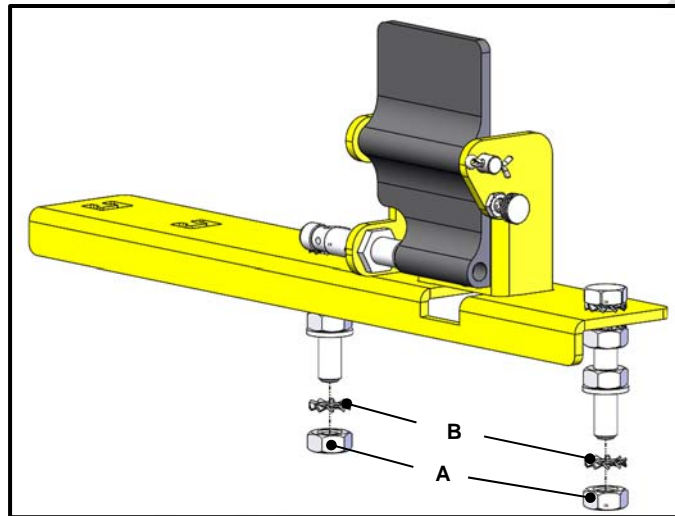


Figure 2-2 Collision Avoidance Device (466D911) Installation Step 1

2. Position the assembly over the selected sorter flange for installation and drop into the middle two holes as shown in Figure 2-3.

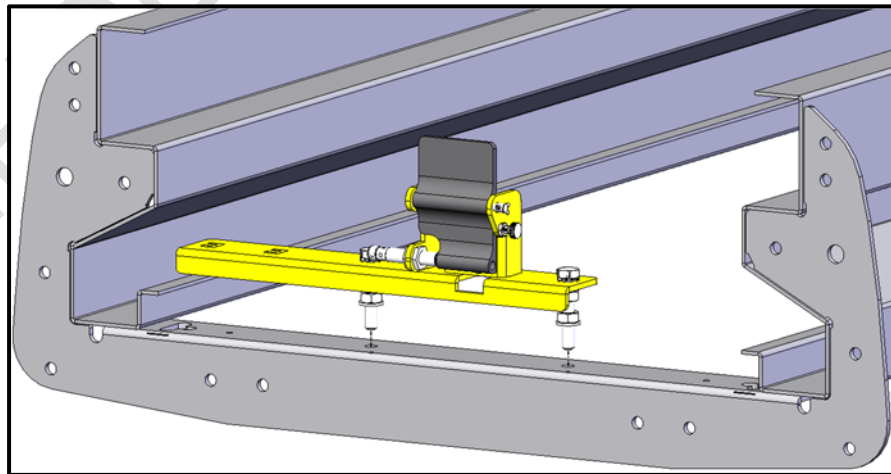
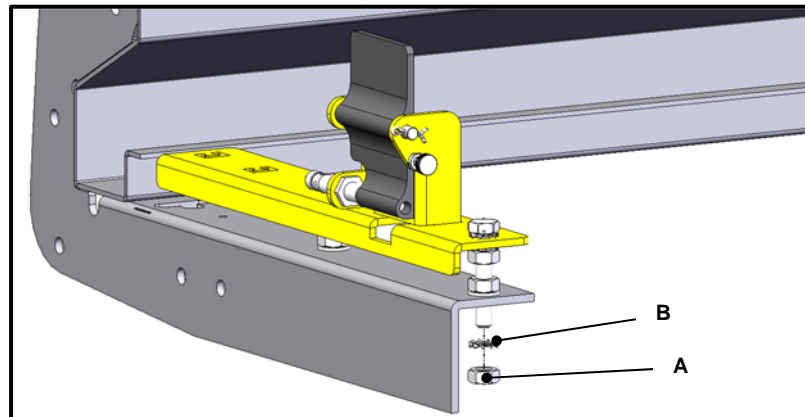


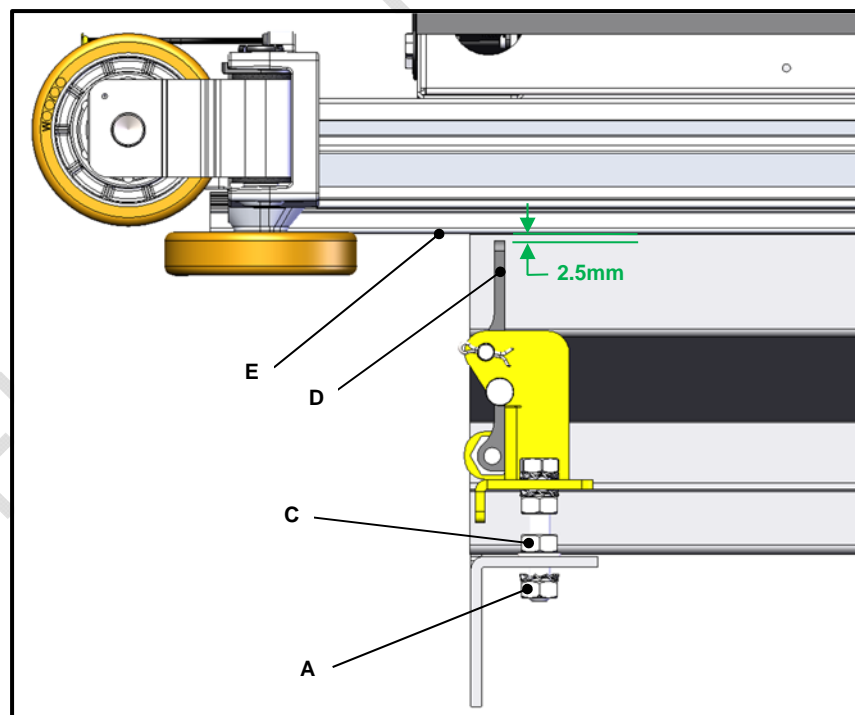
Figure 2-3 Collision Avoidance Device (466D911) Installation Step 2

3. Re-assemble the two M10 Nuts (A) and M10 Tooth Washers (B) leaving them loose but attached to the threads as shown in Figure 2-4.



**Figure 2-4 Collision Avoidance Device (466D911) Installation Step 3**

4. Adjust the two M10 Nuts (C) until the top of the Activation Paddle (D) is level at 2.5mm across the bottom of the Cart (E) as shown in Figure 2-5.



**Figure 2-5 Collision Avoidance Device (466D911) Installation Step 4**

5. Torque the two M10 Nuts (A) to 47 N·m [35 lbf·ft] to lock the Jacking Screw Arrangements in place.

## Connect the I/O Homerun Cable.

Refer to [Figure 2-6](#). Attach the M12 female end of the I/O Homerun Cable to the Inductive Proximity Sensor securing the cable to the Mounting Bracket with Cable Ties. Using the Section Cable Tray, route the I/O Homerun Cable downstream and into the associated LSMxx I/O Cabinet. Plug the M8 male end of the I/O Homerun Cable into port 2 of the LSMxx I/O Cabinet Coupler Module. Secure any excess cable in the Section Cable Tray neatly.

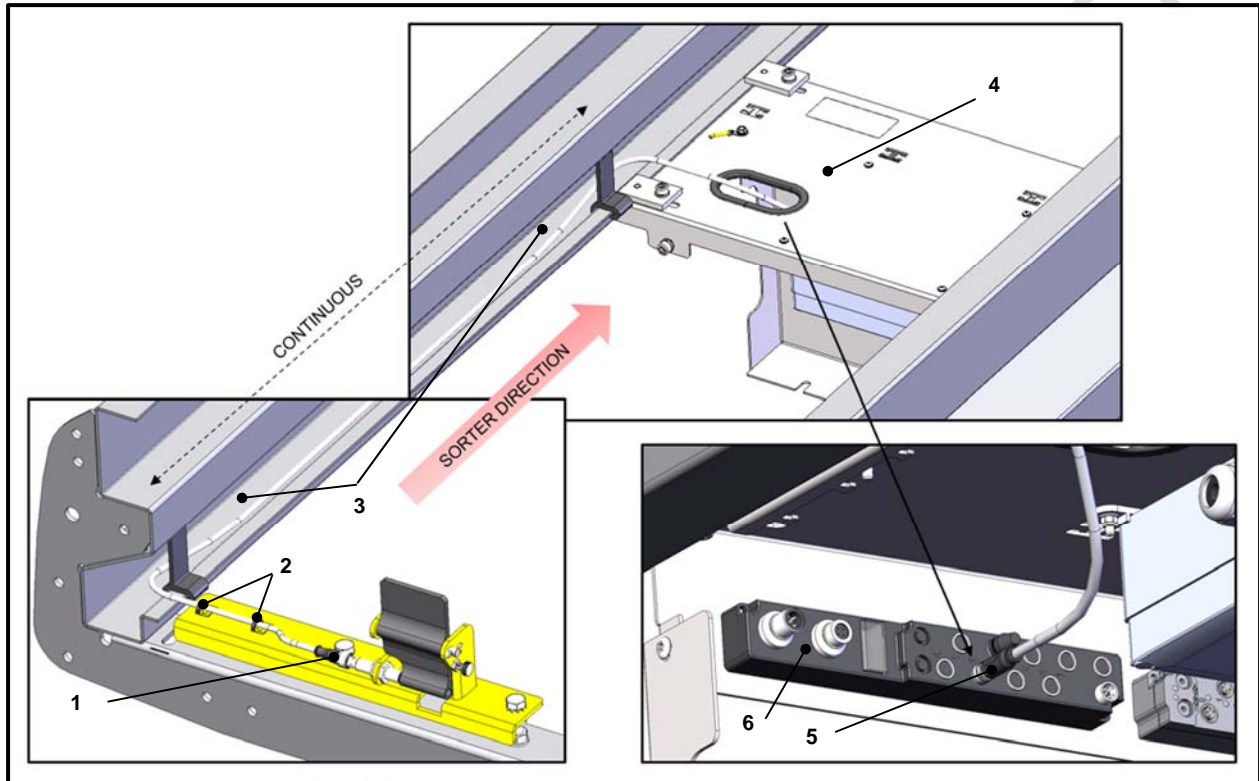


Figure 2-6 I/O Homerun Cable Wiring

1	I/O Homerun Cable (M12 female end)	4	LSMxx I/O Cabinet
2	Cable Ties	5	I/O Homerun Cable (M8 male end) – Port 2
3	Section Cable Tray	6	Coupler Module

## 2.2.2 Setting the Inductive Proximity Sensor

The Collision Avoidance Device comes pre-adjusted from the factory with the correct distance gap setting. The Collision Avoidance Device is properly adjusted when the distance gap between the edge of the Activation Paddle and Inductive Proximity Sensor is 1-2mm as shown in [Figure 2-7](#).

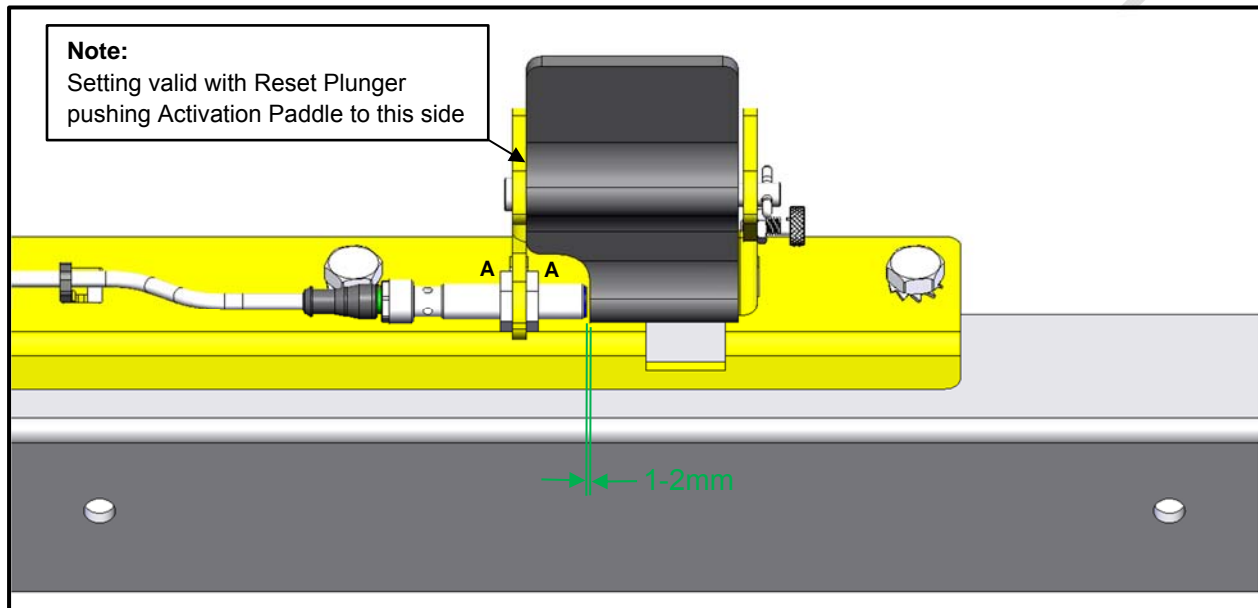


Figure 2-7 Inductive Proximity Sensor Distance Gap Setting

### Adjust the Inductive Proximity Sensor.

1. Loosen the two M12 jam nuts (A) attaching the Sensor to the Collision Avoidance Device Mounting Plate.
2. Make the necessary distance gap adjustment using the feeler gauge.
3. Re-tighten the two M12 jam nuts (C) to **MAX** 12 Nm.

## 3 Control Function & Resetting

### 3.1 Activation

When a foreign object strikes the Activation Paddle, as shown in [Figure 3-1](#), it pivots away from the Home Position, triggering the Inductive Proximity Sensor which signals the PLC to stop the sorter. A built-in light on the Inductive Proximity Sensor will extinguish to indicate the sensor has been triggered. Additionally, the Reset Plunger springs out preventing the Activation Paddle from fully resetting and holds it in the Triggered Position.

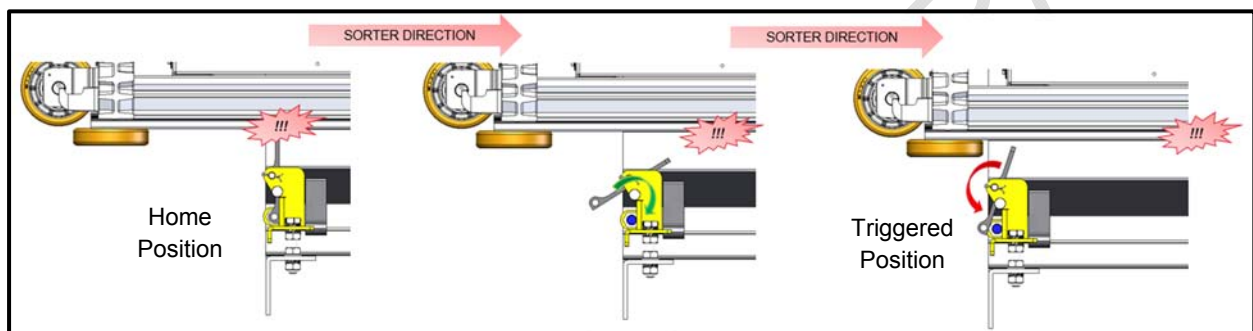


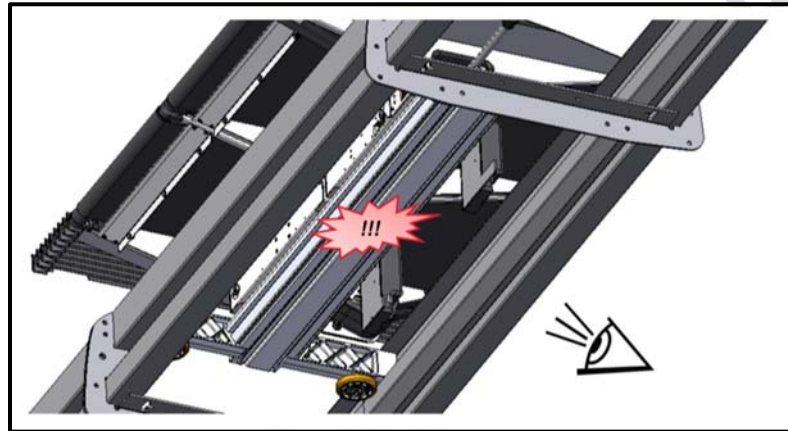
Figure 3-1 Collision Avoidance Device Activation

### 3.2 Function

When the Collision Avoidance Device is activated, the PLC immediately stops the sorter, latches the condition internally, and reports to the HMI, which LSM device triggered the activation. The condition cannot be un-latched until the object which caused the activation has been removed from the system and the Collision Avoidance Device is reset (both require operator intervention – Refer to .Section 3.3).

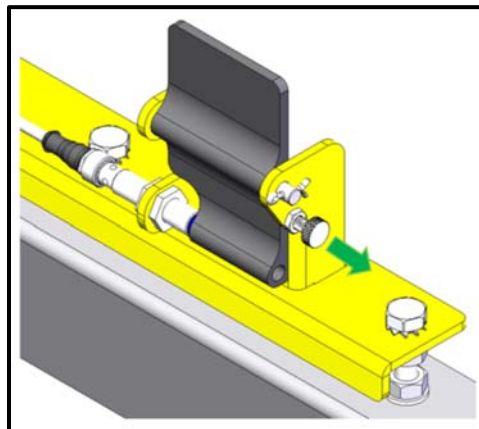
### 3.3 Resetting

1. Maintenance inspects all carts in the sorter between the Collision Avoidance Device and the LSM and removes any foreign objects or debris (FOD) attached to the bottom of carts. If no FOD is found, the carts should be inspected thoroughly to see if something is causing a height issue (broken wheels, bent profiles, etc...). It is also prudent to check the area inside the sorter around these carts as debris is sometimes pushed around during collisions.



**Figure 3-2 Inspect Cart Bottom**

2. Operator resets the Collision Avoidance Device by pulling out the Reset Plunger allowing the Activation Paddle to return to the Home Position. The light on the Inductive Proximity Sensor illuminates signalling that the sensor has been reset. The Activation Paddle is held in the Home Position by a “Soft” Magnetic Latch.



**Figure 3-3 Resetting Activation Paddle to Home Position**



3. Finally, to un-latch the condition in the PLC, the Operator must cycle the associated DCP\_LSMxx Main Disconnect Switch from **ON** → **OFF** → **ON** as shown in orange dashed inset of ~~Figure 3-4~~ Figure 3-4.

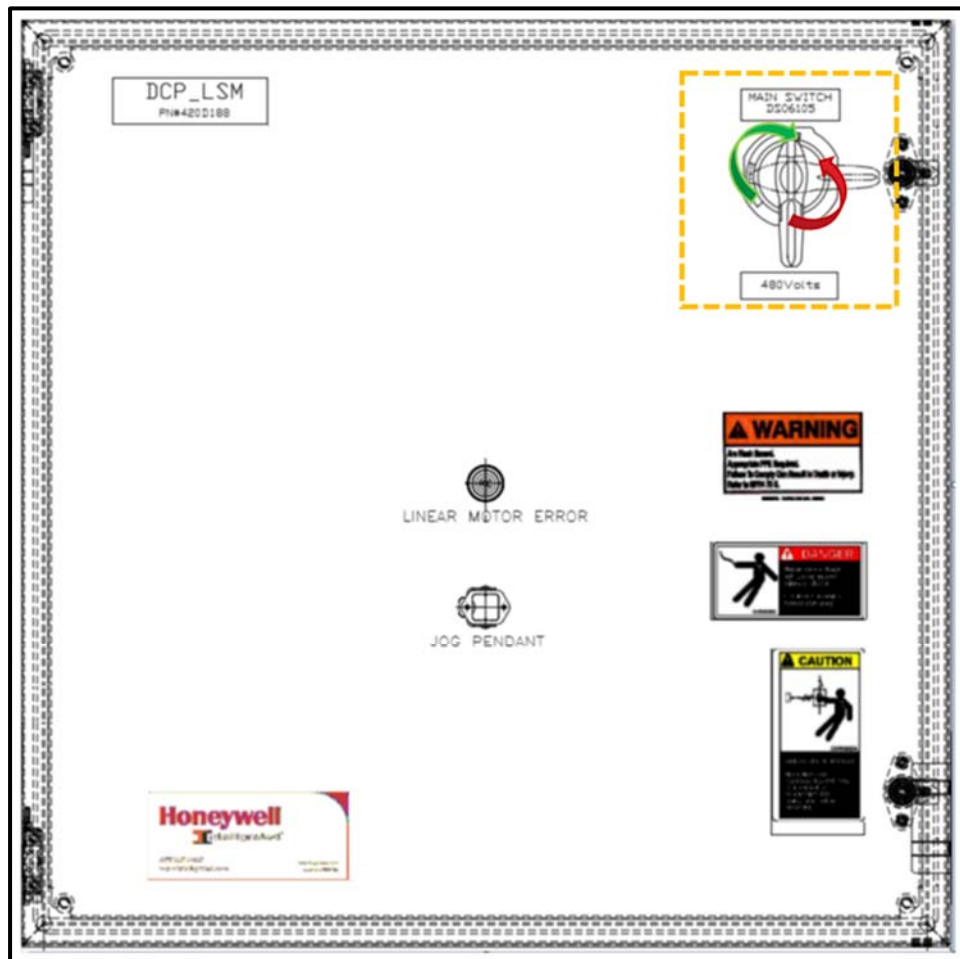


Figure 3-4 Cycling the DCP\_LSMxx Disconnect Switch to Un-Latch PLC