

ChainKeeper

Product Manual

For all Curve Conveyor Systems

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Section 1 Installation

Before You Begin

Note: Be sure to observe all Lockout-Tagout procedures prior to performing any work on the system.

Note: Be sure to wear all necessary Personal Protective Equipment prior to beginning any work.

Note: Installation and modifications should adhere to all local, state and national codes and guidelines for electrical and mechanical installation.

Note: The Penetration into the Control Panel enclosure should be made in accordance to all local, state and national codes and guidelines for electrical and mechanical installation, using components approved for the type of installation.

Identify the System Components

Separate and identify each of the system components. Verify that the system contents match the shipper Packing List.

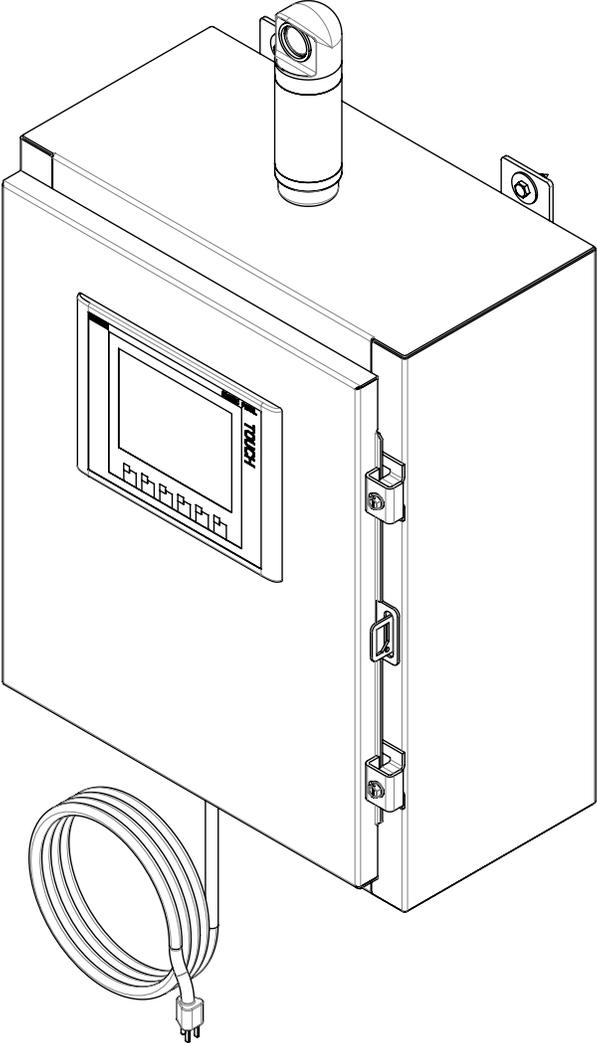
Note: The ChainKeeper system is comprised of several components that when combined, create a functional system that is specifically engineered for the application. The quantities and part numbers for each supplied component can be verified with the Packing List.

Note: Immediately report any missing items to Lubing Systems Customer Service Department. For a list of current phone numbers and email addresses, please refer to the “General Information” section of this manual.

Installation

Control Panel Kit

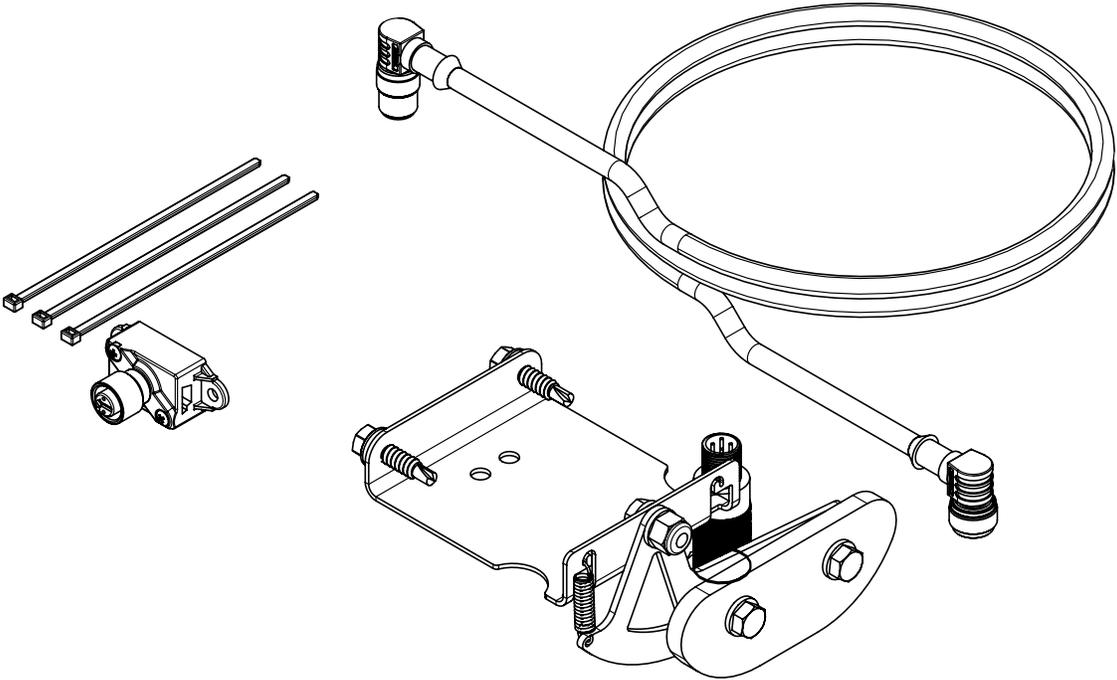
The system Control Panel houses the system electronics and provides the user interface for configuring and monitoring the system. Each system requires a single Control Panel. Verify the quantity of Control Panel Kits provided against the shipper Packing List.



Control Panel Kit		
Part Number	Conveyor Type	Voltage
A100A	All Types	120V
A100B		240V

Sensor Kit

The Sensors are mounted along the length of the conveyor system and monitor the movement of the conveyor chain. Each system will include a number of Sensors according to the design of the conveyor. Verify the quantity of Sensor Kits provided against the shipper Packing List.

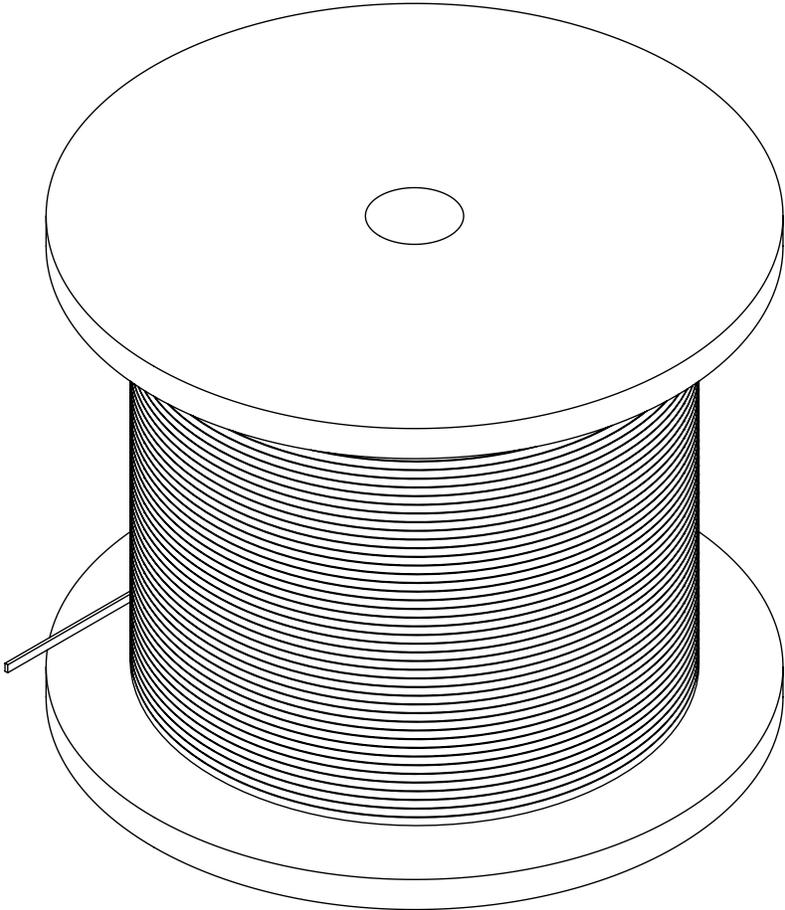


Sensor Kit	
Part Number	Conveyor Type
A101B	All Types

Installation

AS-i Cable

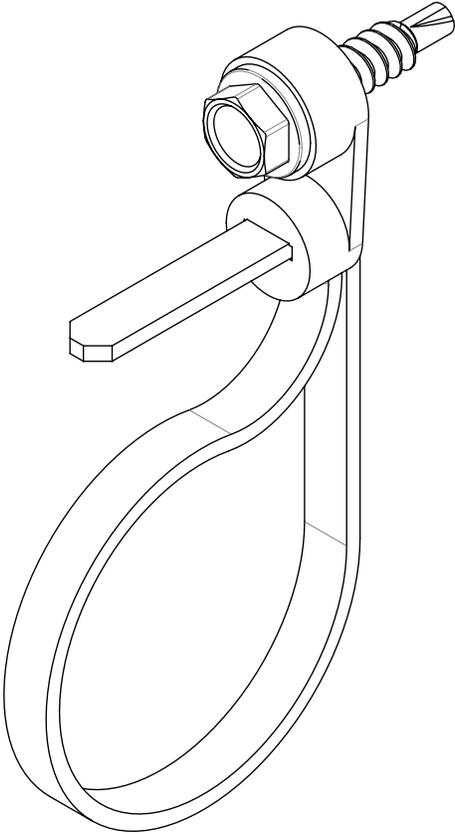
The AS-i Cable provides the connection between the Sensors and the Control Panel. The cable is specifically designed to allow the mounting of a Sensor anywhere along the length of the cable while providing an environmentally sealed connection. Verify the length of AS-i Cable provided against the shipper Packing List.



AS-i Cable, ft	
Part Number	Conveyor Type
A104A	All Types

Cable Mounting Kit

The Cable Mounting Kit provides a means of attaching the AS-i Cable to the conveyor sidesheet. Verify the quantity of Cable Mounting Kits provided against the shipper Packing List.

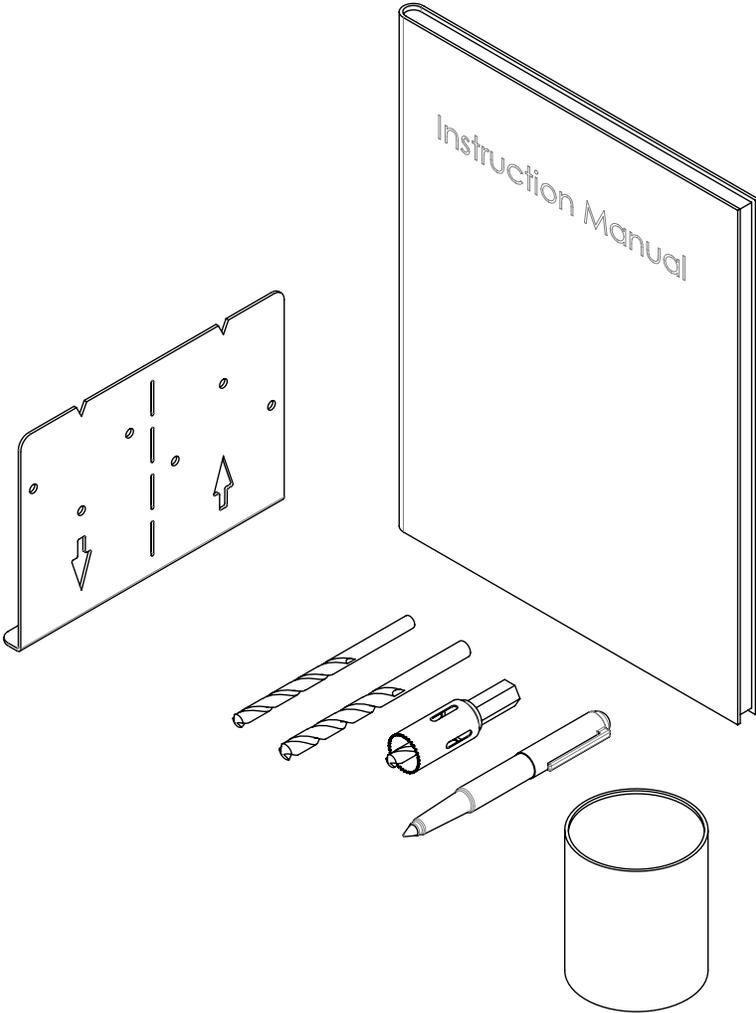


Cable Mounting Kit	
Part Number	Conveyor Type
A103B	All Types

Installation

Installation Kit

The Installation Kit is provided to aid in the installation of the ChainKeeper system. The Installation Kit includes the system instruction manual, a hole template, marker, and all the necessary drill bits for mounting the Sensors on the conveyor sidesheet. Each system requires an Installation Kit to complete the installation. Verify the quantity of Installation Kits provided against the shipper Packing List.

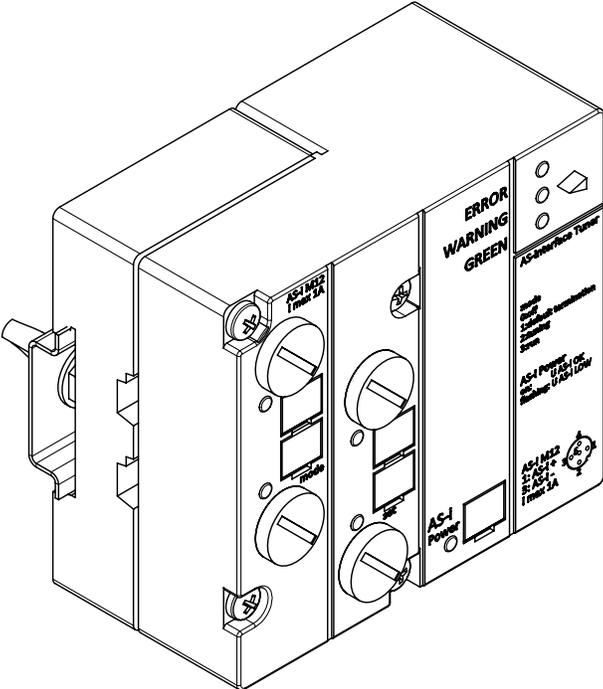


Installation Kit	
Part Number	Conveyor Type
A105A	All Types

Tuner Kit

The Tuner Kit is installed at the end of the AS-i cable run to terminate the AS-i network. A system may have one Tuner for each network segment.

Note: Not every system requires a Tuner Kit. Refer to the shipper Packing List to see if the Tuner Kit is provided for the system.



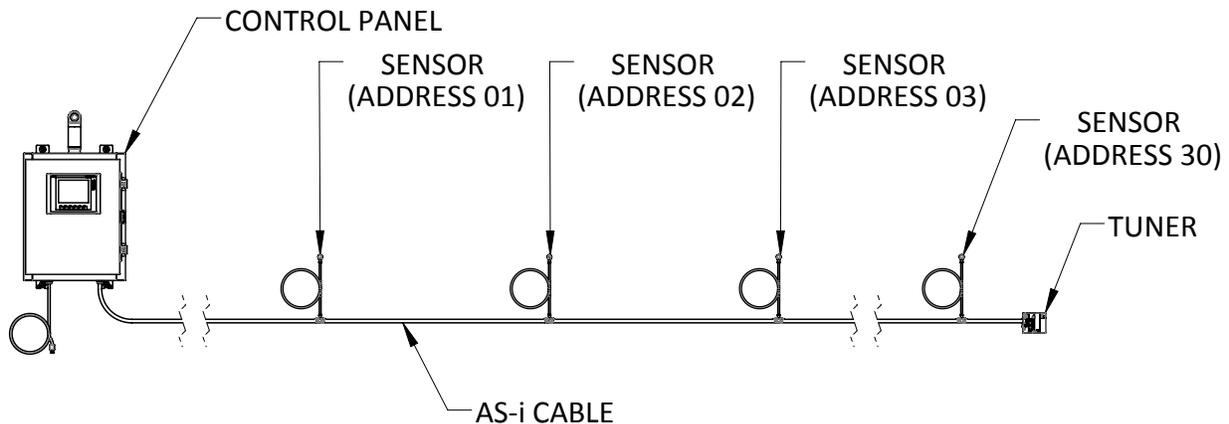
Tuner Kit	
Part Number	Conveyor Type
A102A	All Types

Installation

Installation (Simplified One-Line Diagram)

Survey the Installation

Prior to beginning any work, it is recommended that the installation be closely reviewed and optimum mounting positions for the Control Panel, Sensor positions, and AS-i Cable routing be determined first. Use the following pages as an aid to plan the optimum mounting positions for each of the components.



The Control Panel contains the ChainKeeper system control electronics, low voltage power supply, audible and visual alarm indicators, and the touchscreen User Interface which is used to monitor and configure the system. The Control Panel is designed to be installed where the operators can monitor the health of the conveyor system and identify the source of any faults that may occur.

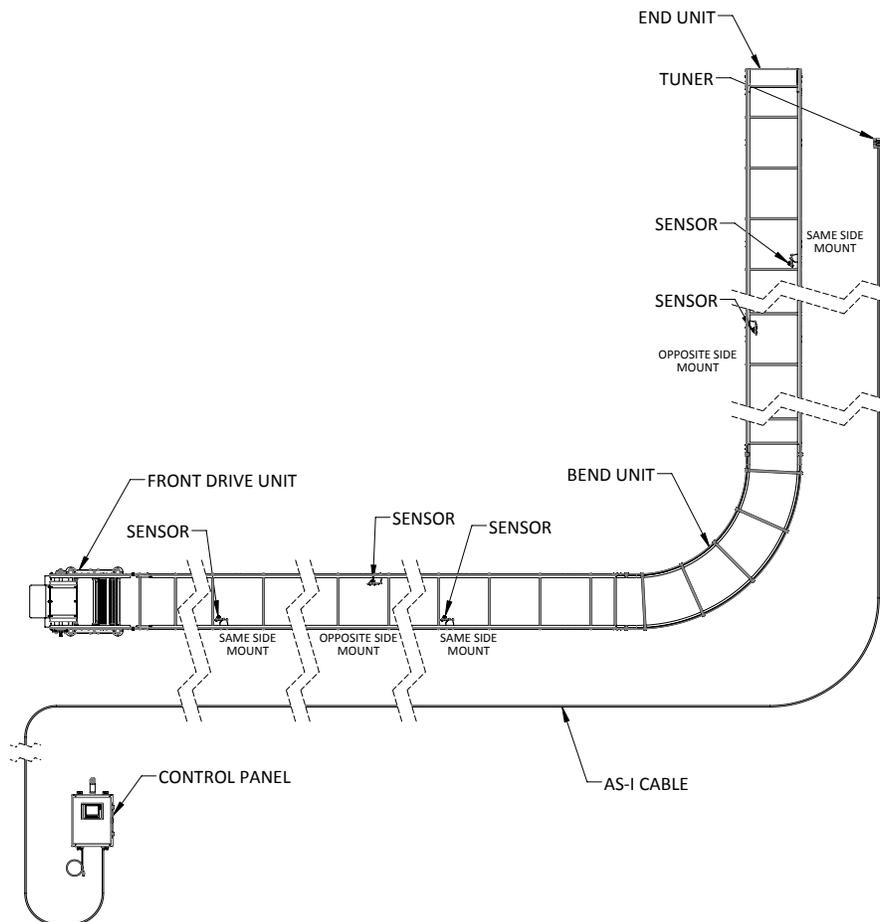
Sensors provide the monitoring data to the ChainKeeper system. Each Sensor is uniquely addressed with a number on the network which corresponds with the diagnostics and fault information on the Control Panel. This permits the ChainKeeper system to specifically identify the location of any faults on the conveyor system.

The AS-i Cable provides the electrical power and communications between the Control Panel and the Sensors. The AS-i Cable is attached along one side of the conveyor system and permits the connection of a Sensor anywhere along the length of the cable run. Review the length of AS-i Cable provided to aid in designing the spacing and location of the Sensors and the Control Panel.

The Tuner is installed at the end of the AS-i Cable run to terminate the network. The Tuner is not required on every ChainKeeper system. Refer to the shipper Packing List to see if the Tuner Kit is provided for this ChainKeeper system.

Installation

Typical Installation Detail View



The Control Panel may be remotely mounted from the conveyor system, to an area where the status of the system can be monitored. The installer should carefully review the length of AS-i Cable provided for the system to ensure that the spacing from the Control Panel mounting position to the last Sensor position does not exceed the length of AS-i Cable provided. Refer to the shipper Packing List to determine the length of AS-i Cable provided.

Sensors are mounted along the length of the conveyor system on either side of the conveyor. Refer to the section "Sensor Same Side Installation Instructions" for installations where the Sensor is mounted on the same side as the AS-i Cable. Refer to the section "Sensor Opposite Side Installation Instructions" for installations where the Sensor is mounted on the sidesheet opposite the AS-i Cable.

The AS-i Cable is routed from the Control Panel along the length of the conveyor, to the last Sensor position. The AS-i Cable should not change sides down the length of the conveyor.

Note: In the diagram above, the AS-i cable is indicated to the side of the conveyor for illustration purposes.

The Tuner is installed at the end of the AS-i Cable run to terminate the network. The Tuner is not required on every ChainKeeper system. Refer to the shipper Packing List to see if the Tuner Kit is provided for the ChainKeeper system.

Plan the AS-i Cable Routing

The AS-i Cable is the media that interconnects the Sensors to the Control Panel. The AS-i Cable is designed to attach to the conveyor side sheet and run along the length of the conveyor to provide the electrical power and communications to the Sensors. The AS-i cable should be installed in one continuous run and NOT cut or spliced anywhere along its length. The AS-i cable should be installed, beginning at the Control Panel, and attach to the conveyor sidesheet along one side of the conveyor, continuing to the last Sensor position. It is recommended that the path of the AS-i Cable not change from one side of the conveyor system to the opposite side. The distance the Control Panel can be remotely mounted from the conveyor can be determined by reviewing the length of AS-i Cable provided and noting the planned position of the last Sensor.

The following list illustrates the items to consider when planning the routing for the AS-i Cable.

- DO review the length of AS-i Cable provided and the location along the length of the conveyor of the last Sensor to aid in determining the Control Panel mounting location.
- DO locate the Control Panel near the AS-i Cable for interconnecting.
- DO start the AS-i Cable routing at the Control Panel and extend to the last Sensor location.
- DO NOT splice the AS-i Cable.
- DO NOT switch sides when routing the AS-i Cable along the length of the conveyor.

Installation

Determine the Control Panel Mounting Location

The Control Panel provides the user interface for configuring and monitoring the system, and encloses the system electronics. Each ChainKeeper system will have only one Control Panel. The Control Panel will attach at the front end of the AS-i Cable network and communicate to the Sensors to monitor for system faults. The Control Panel should be mounted in a location near the front of the conveyor system. The distance the Control Panel can be remotely mounted from the conveyor can be determined by reviewing the length of AS-i Cable provided and noting the planned position of the last Sensor. The Control Panel operates from a common “always on” grounded convenience outlet.

The Control Panel can optionally be used to stop the conveyor system in case of a system fault. This feature requires that the conveyor Stop circuit be routed through the Control Panel enclosure.

The following list illustrates the items to consider when planning the mounting of the Control Panel:

- DO review the length of AS-i Cable provided and the location along the length of the conveyor of the last Sensor to aid in determining the Control Panel mounting location.
- DO locate the Control Panel near the front of the conveyor system.
- DO locate the Control Panel near the conveyor stop circuit to interface with the conveyor control system.
- DO locate the Control Panel near a convenience outlet for power.

Determine the Sensor Mounting Locations

Sensors can be installed anywhere along the length of the conveyor system where the AS-i Cable is attached. Typically these locations are near a motorized driving unit or a bend unit where the conveyor chain is most likely to experience a fault, or in any location with a previous history of problems with the conveyor chain breaking or dropping.

Sensors are intelligent devices having a unique address number which corresponds with the diagnostics and fault information on the Control Panel operator screen. This unique address numbers permits the system to specifically identify the location of the fault by reporting the faulted address number. Care should be taken to record the address number of each Sensor and it's mounting location to quickly and easily identify the source of the fault by address number. The system is provided with each Sensor having a unique address number. If replacements or additional Sensors are added to the system, care must be taken to request a Sensor with an address number that will not be duplicated on the network.

Sensors can be mounted on either side of the conveyor system, but all electrical connections are made to the side that the AS-i Cable is attached. Refer to the section "Same Side Installation Instructions" for installations where the Sensor is mounted on the same side as the AS-i Cable. Refer to the section "Opposite Side Installation Instructions" for installations where the Sensor is mounted on the sidesheet opposite the AS-i Cable.

The following list illustrates the items to consider when planning the mounting of the Sensors:

- DO mount the Sensors to any side of the conveyor system. Installation Instructions vary according to which side of the conveyor system the Sensor is mounted. Care should be taken to use the correct installation instructions according to the side of the conveyor the Sensor is being installed. Refer to the section "Same Side Installation Instructions" for installations where the Sensor is mounted on the same side as the AS-i Cable. Refer to the section "Opposite Side Installation Instructions" for installations where the Sensor is mounted on the sidesheet opposite the AS-i Cable.
- DO mount the Sensors near motorized drive units or specific trouble areas.
- DO review the length of AS-i Cable provided to aid in determining the Sensor mounting locations.
- DO note the Sensors address number and its mounting location to assist in identifying the source of a fault.
- DO NOT duplicate a Sensor address number on the network.

Mechanical Installation Instructions

Install the Control Panel

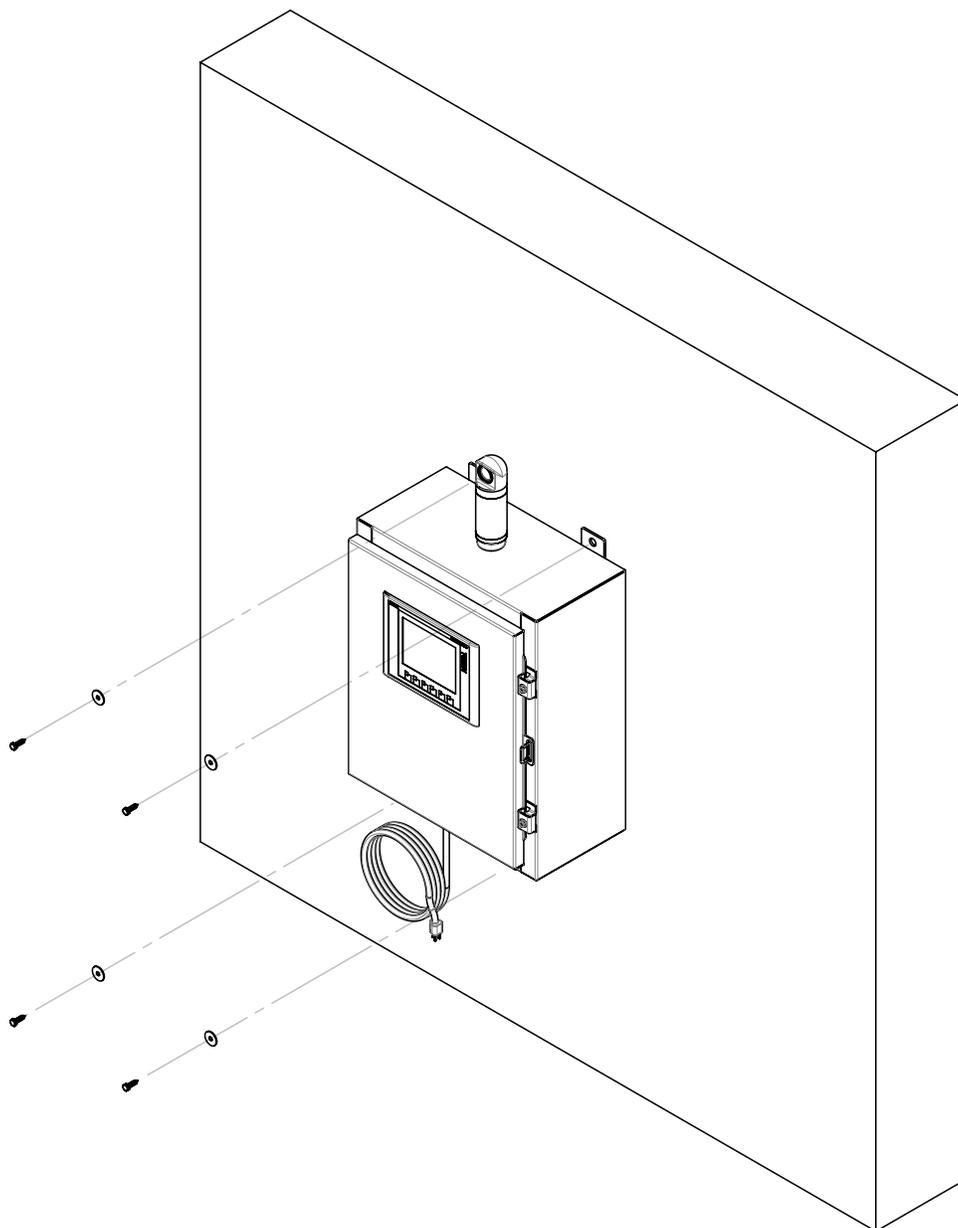
1. Identify the location for mounting the Control Panel.

Note: Each system is provided with a length of AS-i cable necessary to run the length of the conveyor system, with an additional length to allow for remotely mounting the enclosure. It is important that the enclosure be mounted as close as possible to the conveyor system to ensure that a sufficient length of AS-i cable is available to complete the installation. Review the shipper Packing List to determine how much AS-i cable has been provided to aid in determining the optimal mounting location for the Control Panel.

Note: The Control Panel requires standard wall outlet for power.

Note: Refer to Control Panel part number and Component Details Section for voltage requirements.

Note: The Control Panel can be used to stop the conveyor system if a system fault is detected. The conveyor system STOP circuit must be wired through the Control Panel if this feature is desired. Refer to the Electrical Installation section for information on wiring the STOP circuit.



2. Attach the Control Panel.

Note: The Control Panel is provided with fasteners for attaching to a wood surface. If a surface other than wood is desired, fasteners must be purchased separately.

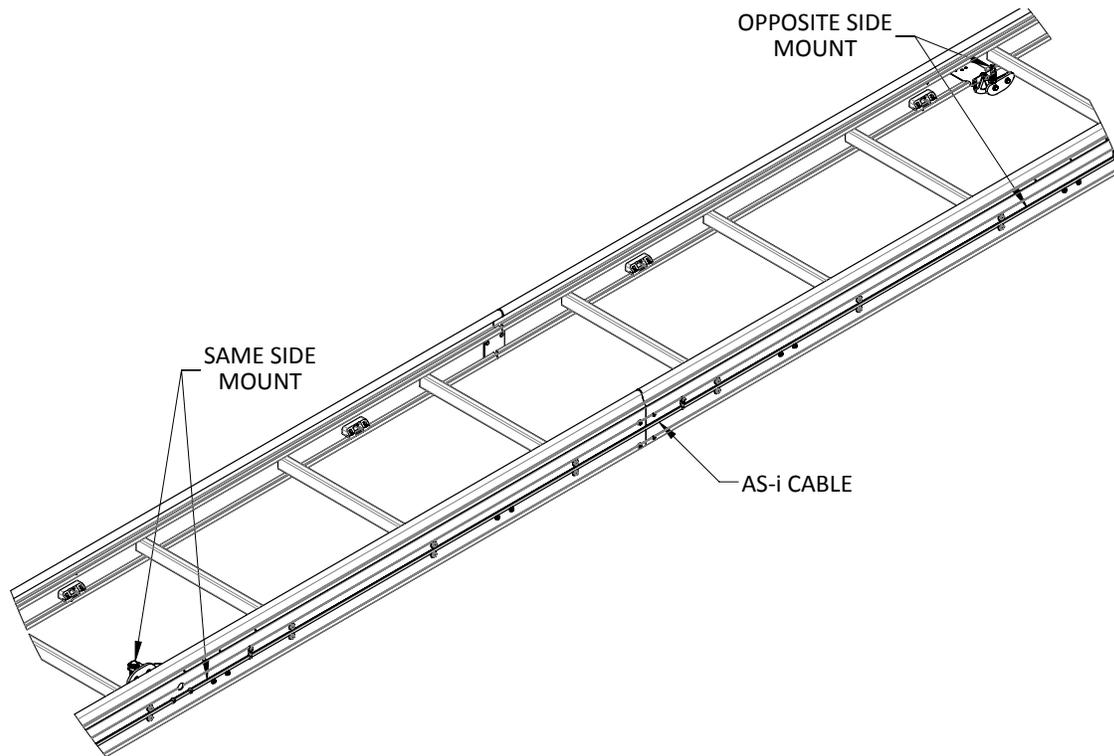
Note: It is important that the panel be leveled prior to attaching to ensure that any electrical connections leaving the panel are able to squarely seat with the sides and bottom of the enclosure.

3. Securely tighten all fasteners.

Installation

Install the Sensors

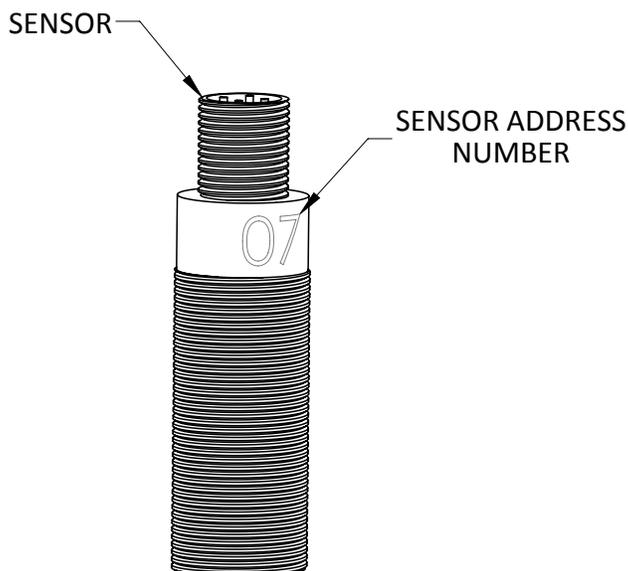
Note: Refer to the section “Same Side Installation Instructions” for installations where the Sensor is mounted on the same side as the AS-i Cable. Refer to the section “Opposite Side Installation Instructions” for installations where the Sensor is mounted on the sidesheet opposite the AS-i Cable.



Sensor Same-Side Installation Instructions

Note: These instructions are for installations where the Sensor is installed on the same sidesheet as the AS-i Cable. For installations where the Sensor is installed on the sidesheet opposite of the AS-i cable, refer to the section “Sensor Opposite Side Installation Instructions”. For more information, refer to the “Typical Installation Detail View” located in the “Survey the Installation” section of this instruction manual.

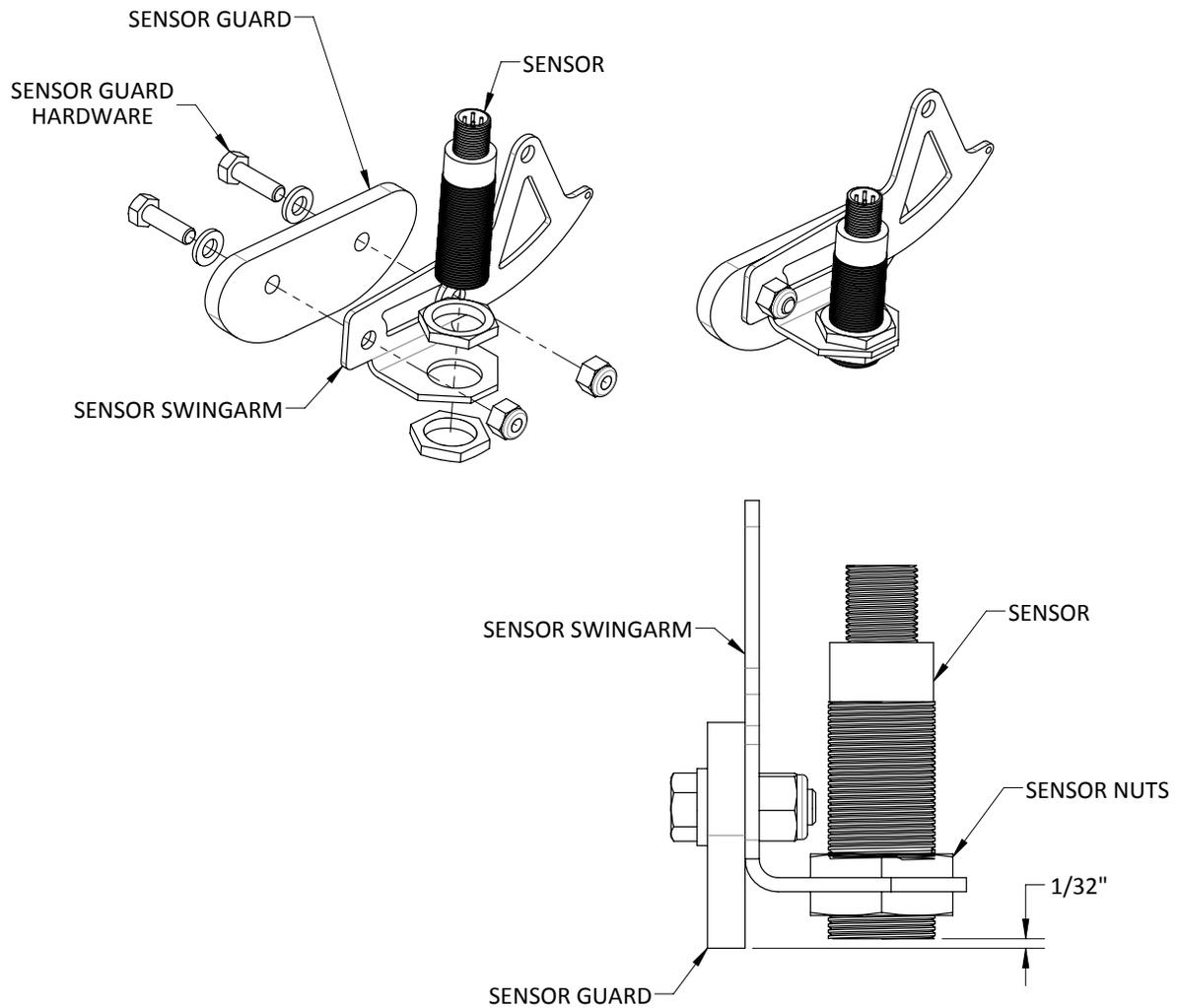
Assemble Sensor Kit



1. Identify the Sensor that will be used at this mounting location.

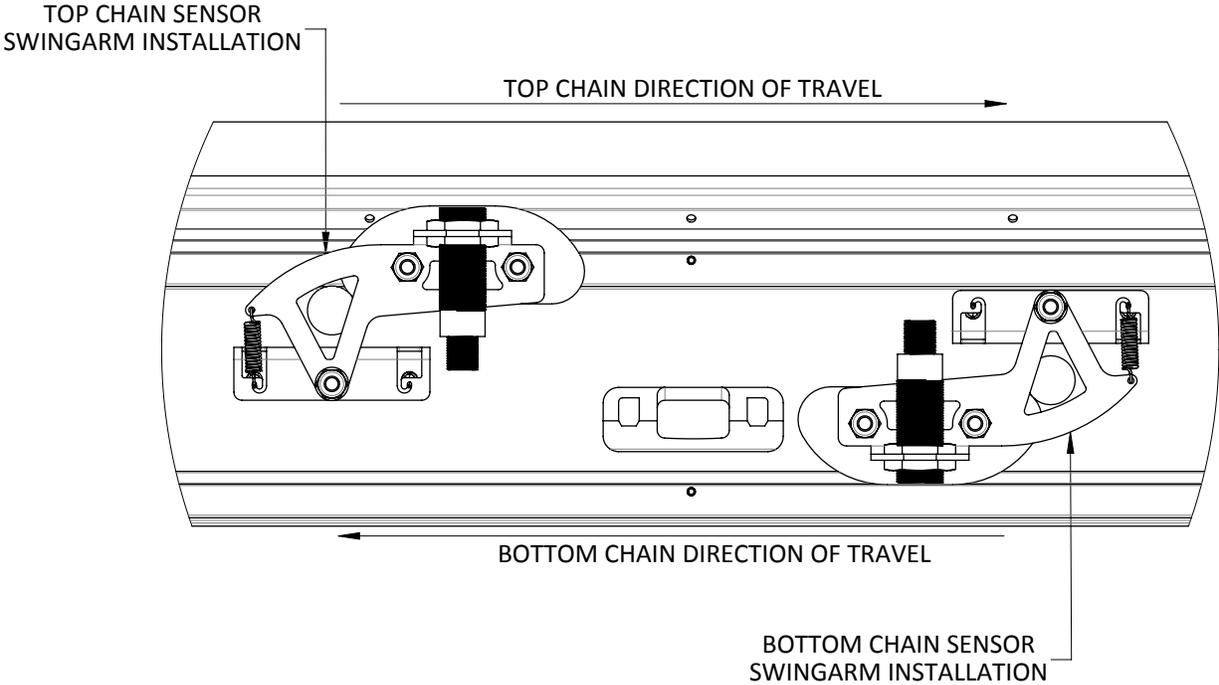
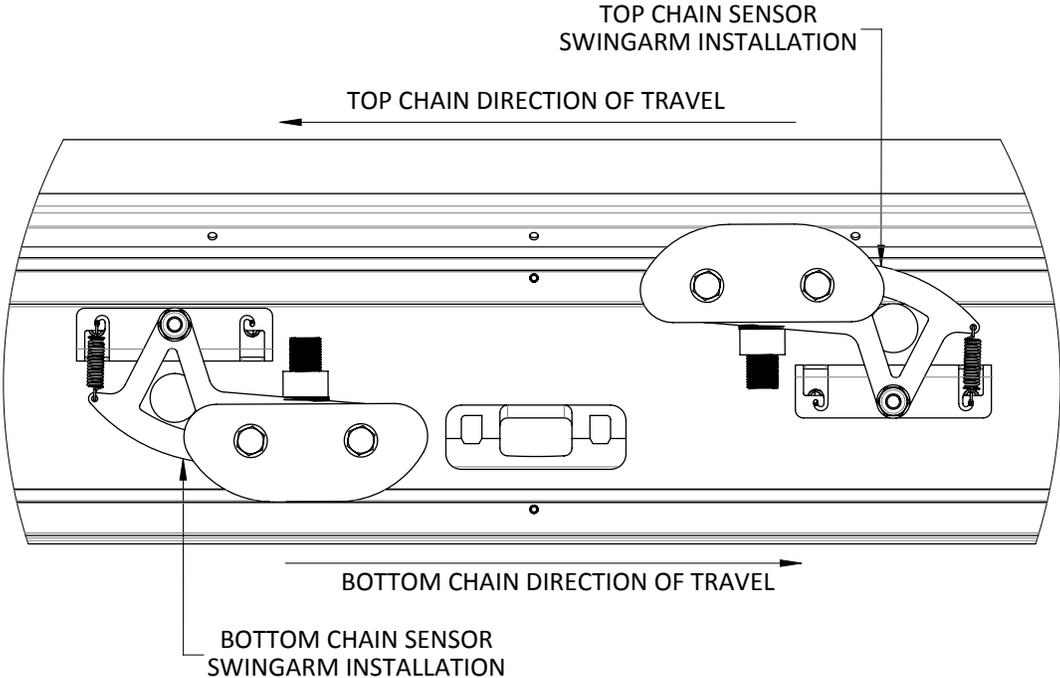
Note: Each Sensor in the system is uniquely identified by an address number that is marked on the Sensor. This address number will correspond to the diagnostics and fault information that appears on the control panel and will allow the system to specifically identify the location of any faults that occur in the system.

Installation



2. Using the fasteners provided, attach Sensor Guard and Sensor to Sensor Swingarm.
3. Adjust the sensor so that there is a 1/32" gap between the Sensor and the bottom of the Sensor Guard.

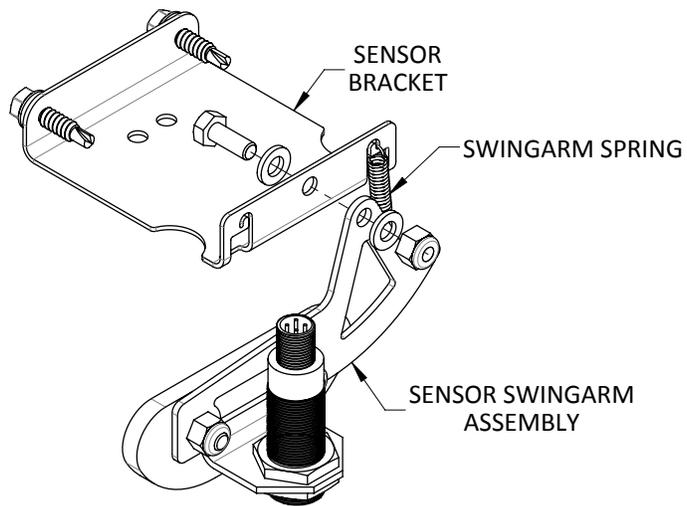
Note: Sensor will be just under flush with the Sensor Guard.



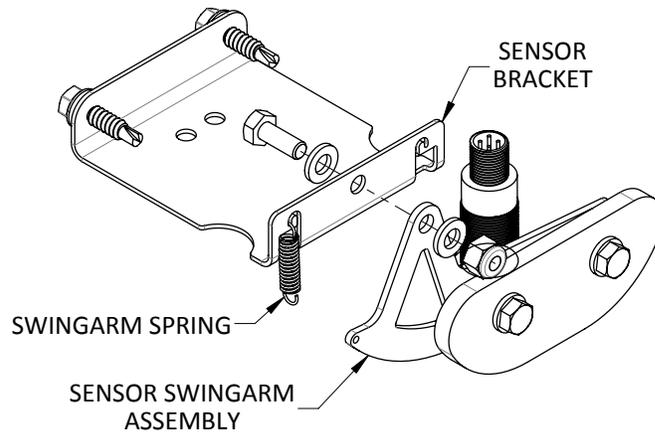
- 4. Identify the proper sensor installation configuration by ensuring that the swingarm is always trailing in the direction of chain travel.

Installation

CONFIGURATION #1

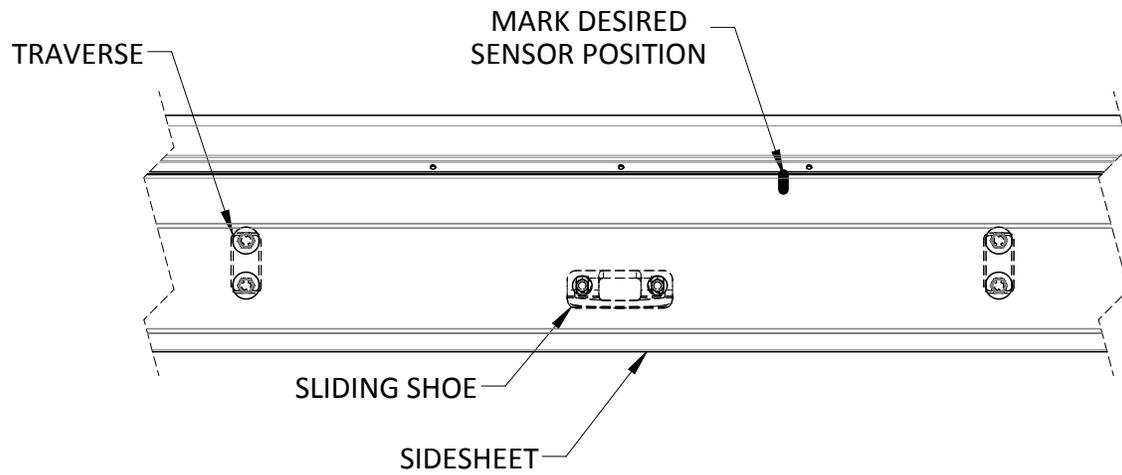


CONFIGURATION #2



5. Attach the Sensor Swingarm Assembly to the Sensor Bracket in the proper configuration using the supplied fasteners and Swingarm Spring.

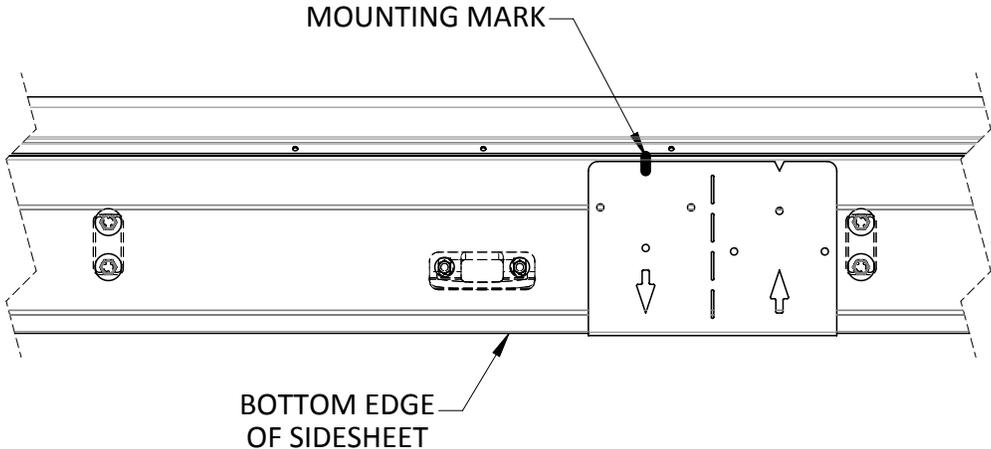
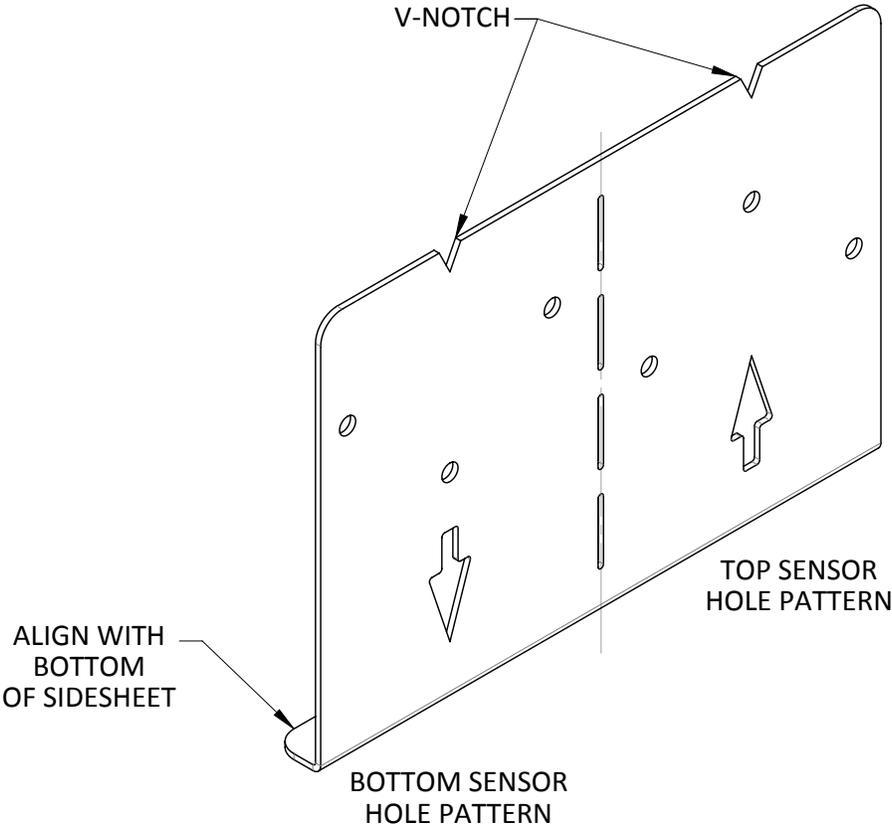
Drill Conveyor Sidesheet



1. Determine the location along the length of the conveyor where the Sensor will be mounted and mark a line near the top of the conveyor sidesheet.

Note: Ensure that the mounting location does not interfere with a Sliding Shoe, Traverse or any other component for the conveyor system.

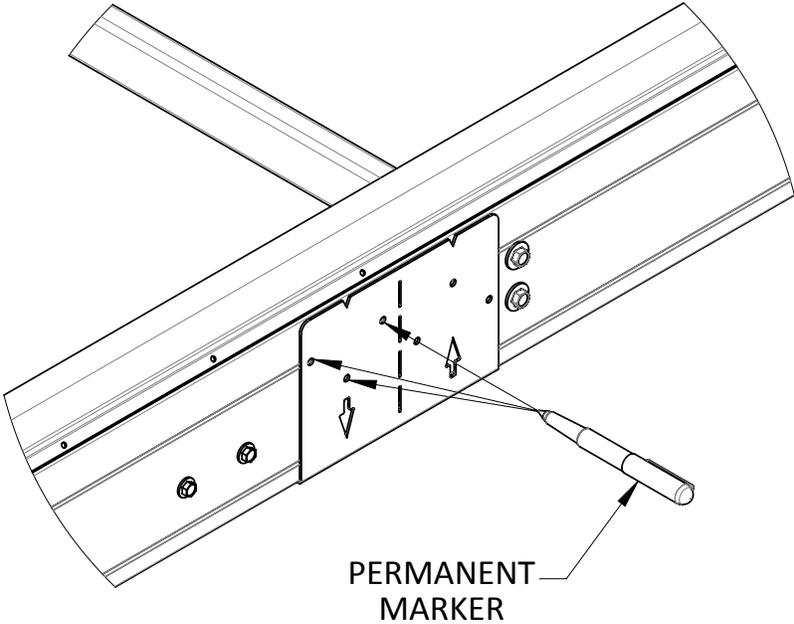
Installation



2. Using the hole template provided in the Installation Kit, firmly hold the hole template flush with the bottom of the conveyor sidesheet and align the V-Notch with the Sensor mounting mark.

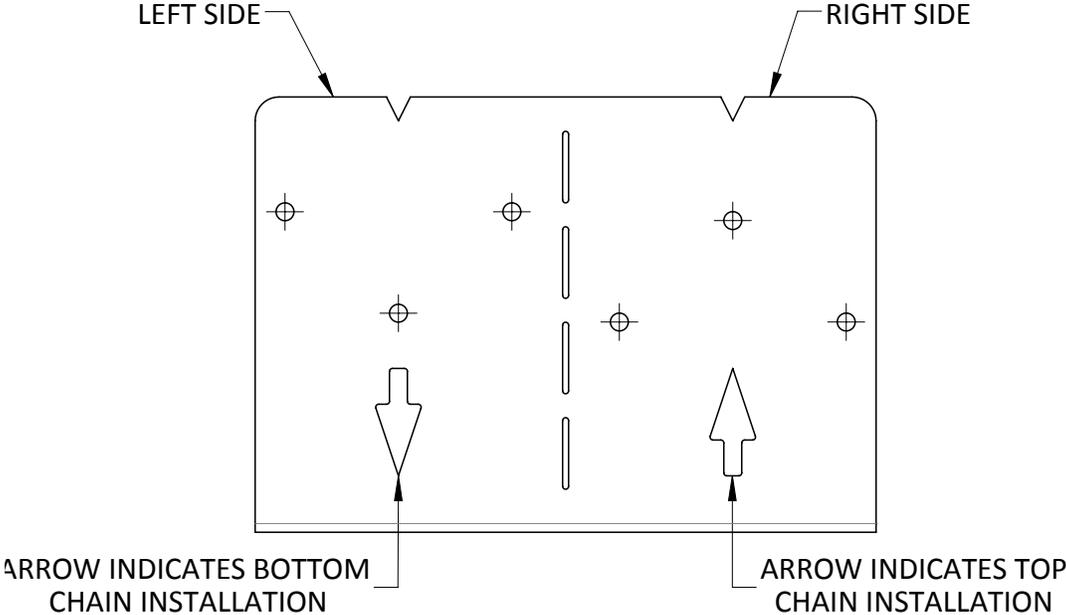
Note: For top chain Sensor installations, use the right side of the hole template. For bottom chain Sensor installations use the left side of the hole template.

Note: It is important that the bottom lip of the hole template be held flush with the bottom of the conveyor sidesheet to ensure that the holes are in the proper position.

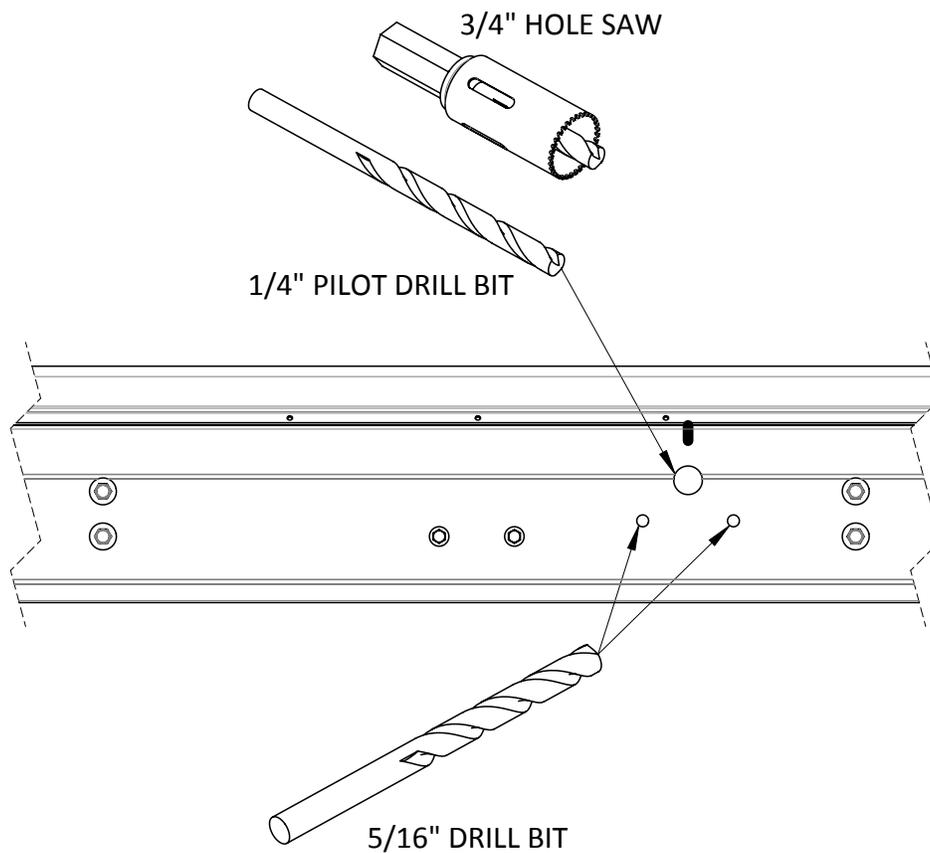


3. Using a scribe or permanent marker, mark the three mounting holes on the conveyor sidesheet.

Note: Mark only the three hole positions on the side of the template that is being used. For top chain Sensor installations, use the right side of the hole template. For bottom chain Sensor installations use the left side of the hole template.



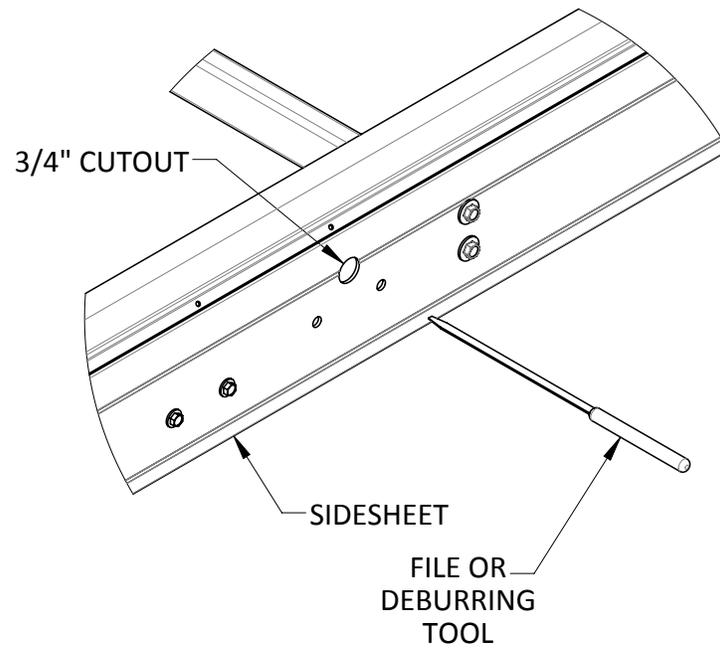
Installation



4. Using the drill bits provided in the Installation Kit, drill the two 5/16" and the 1/4" pilot hole in the conveyor sidesheet.

Note: It is required that the 3/4" hole be pre-drilled with a 1/4" pilot drill bit prior to using the 3/4" hole saw.

5. Using the hole saw provided, drill the 3/4" hole in the conveyor sidesheet where the 1/4" pilot was made.



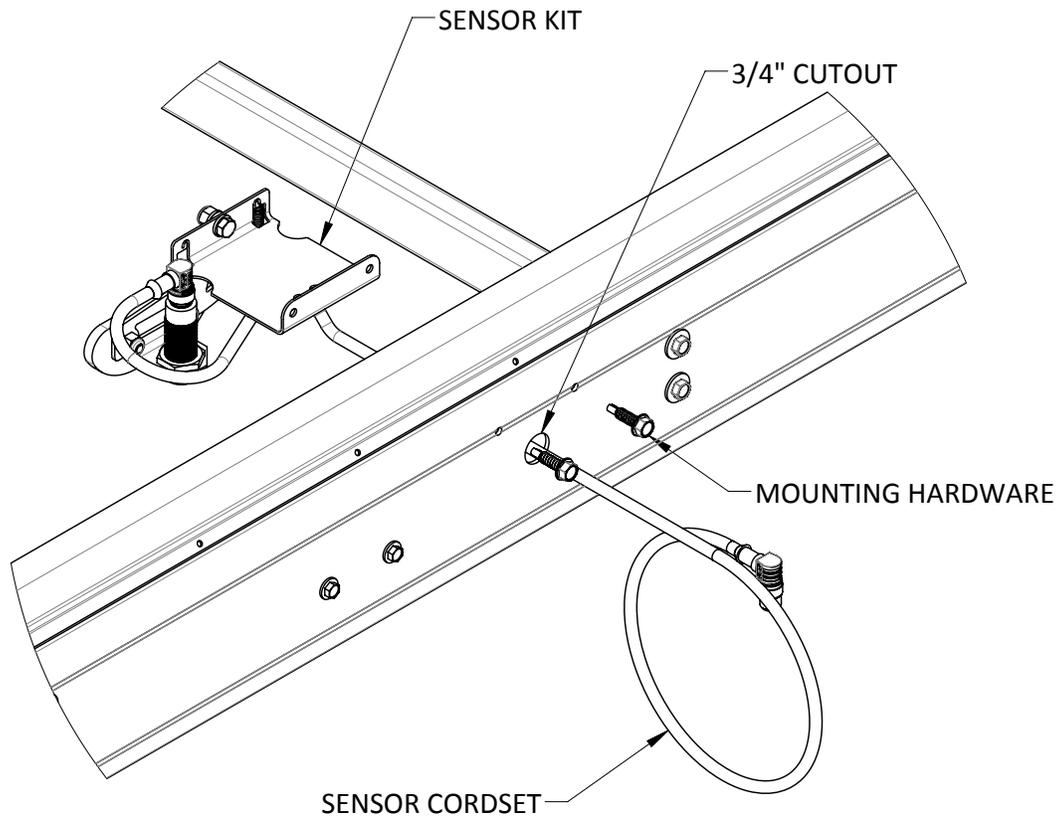
6. Using a file or de-burring tool, remove any sharp edges and burrs from the 3/4" cutout.

Note: The Sensor wiring will be routed through this 3/4" cutout. It is important that any sharp edges and burrs be removed from the hole to protect the wiring from damage.

Installation

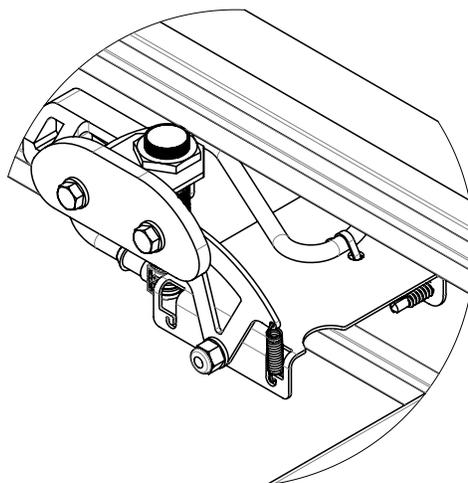
Mount Sensor Kit

Note: It will be easier to install the Sensor if the conveyor chain is removed, but it is not necessary to remove the conveyor chain to complete the installation.

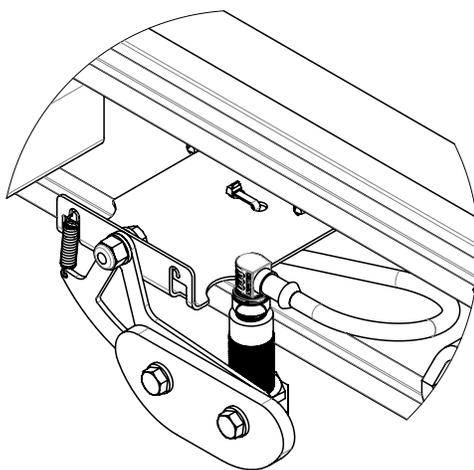


1. Position the assembled Sensor Kit, along the interior of the sidesheet and route the Cordset through the 3/4" cutout.

Note: If the conveyor chain has not been removed, the assembled Sensor Kit can be pushed in between two conveyor chain rods. Care should be taken not to over bend the rods.



TOP CHAIN
SENSOR INSTALLATION



BOTTOM CHAIN
SENSOR INSTALLATION

2. Using the provided fasteners, secure the assembled Sensor Kit to the conveyor sidesheet.

Note: Care should be taken to properly orient the Sensor Mounting Bracket.

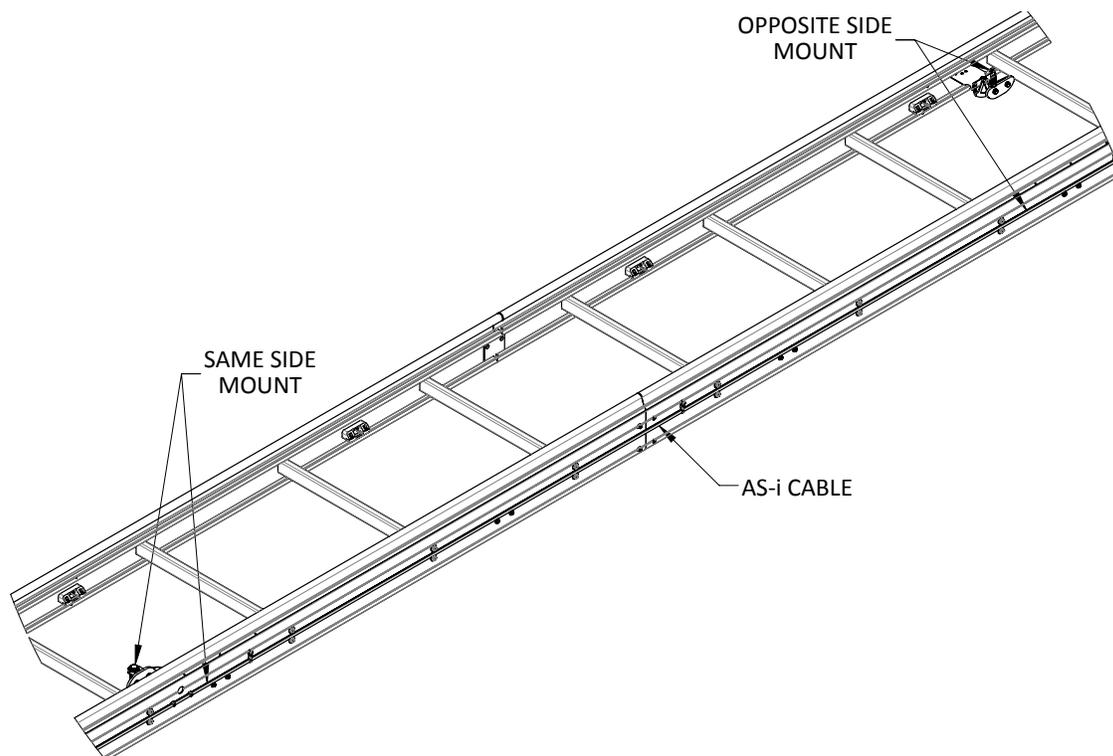
3. Securely tighten all fasteners.
4. If the conveyor chain was removed, re-install the conveyor chain.

Installation

Sensor Opposite-Side Installation Instructions

Note: These instructions are for installations where the Sensor is installed on the sidesheet opposite of the AS-i cable. For installations where the Sensor is installed on the same sidesheet as the AS-i cable, refer to the section “Sensor Same Side Installation Instructions”. For more information, refer to the “Typical Installation Detail View” located in the “Survey the Installation” section of this instruction manual.

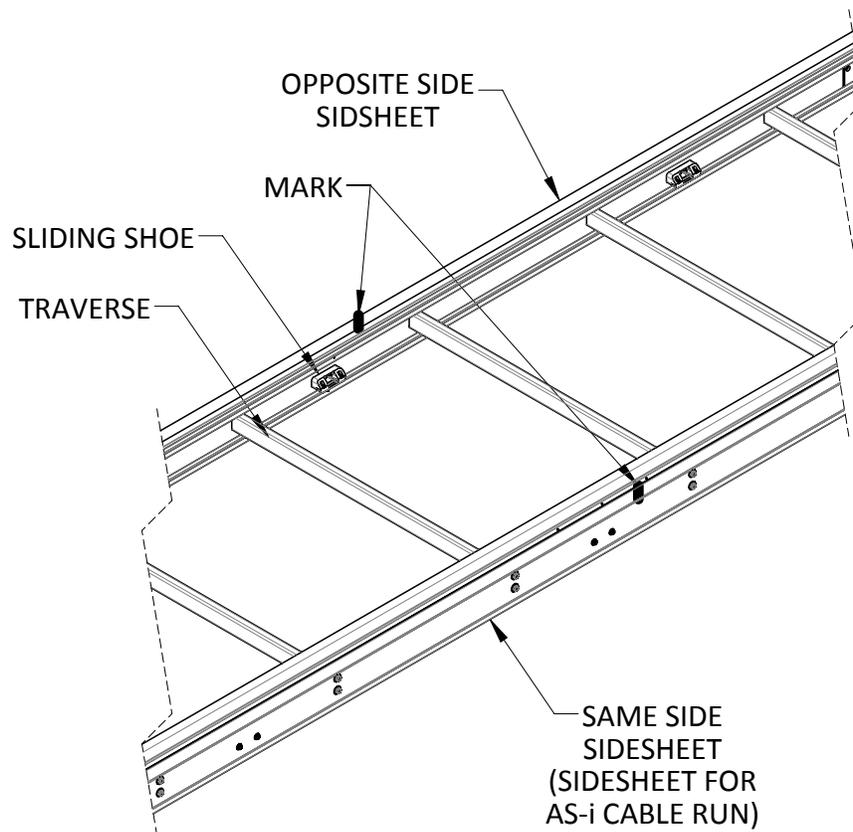
Assemble Sensor Kit



1. Identify Sensor.
2. Assembly Sensor Swingarm.
3. Identify proper Sensor mounting configuration.
4. Attach Sensor Swingarm Assembly to Sensor Bracket.

Note: Refer to Same-Side Installation Instructions for details to complete the steps above.

Drill Conveyor Sidesheet



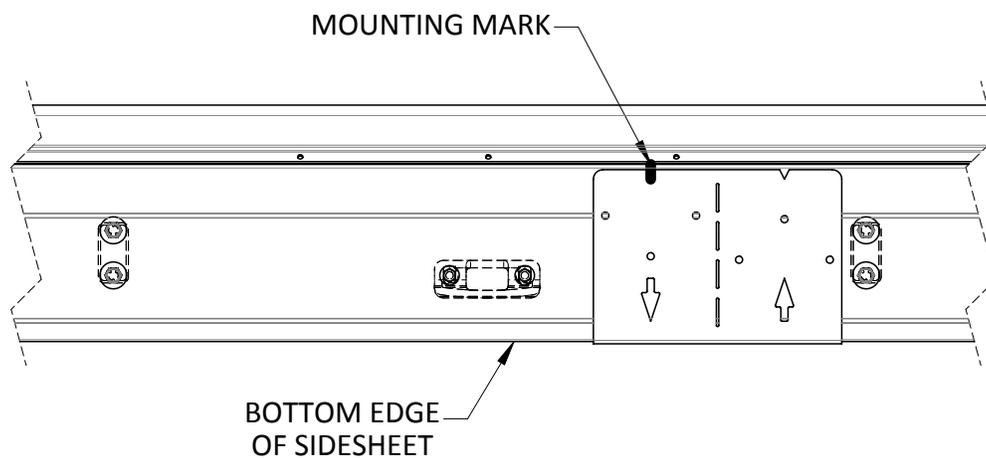
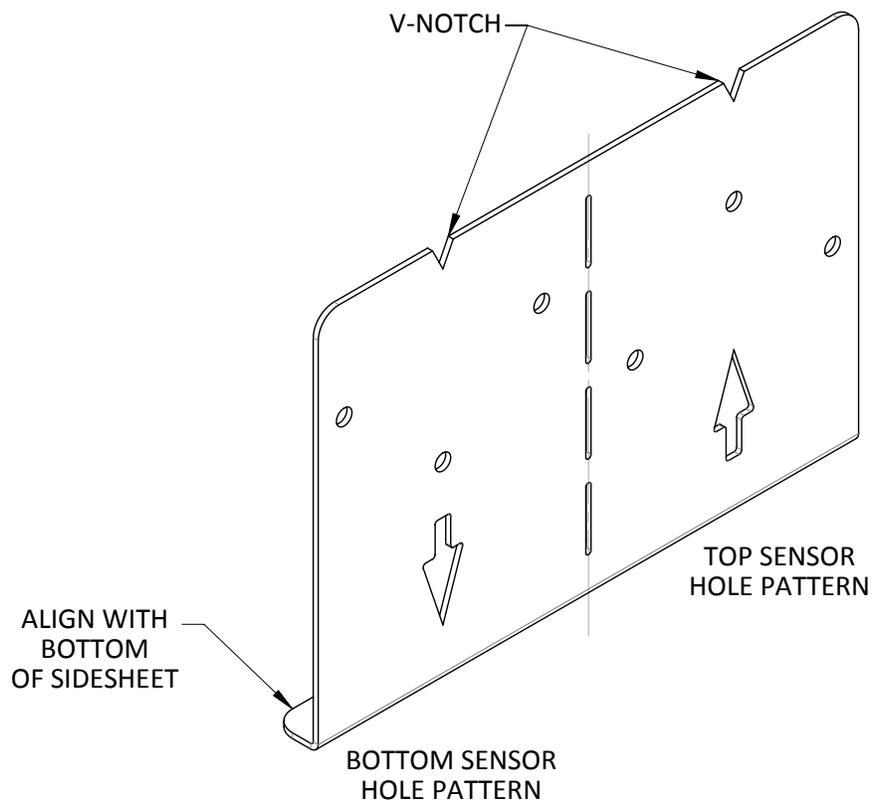
1. Determine the location along the length of the conveyor where the Sensor will be mounted and mark a line near the top of the conveyor sidesheet on both sides of the conveyor.

Note: Both sides of the conveyor should be marked for the Sensor mount. The Sensor Mounting Bracket will attach to the sidesheet opposite the AS-i Cable but the Cordset will exit through a 3/4" cutout on the same sidesheet the AS-i Cable is attached.

Note: The Sensor mounting location should be as close to a Traverse as possible. The Sensor Cordset will attach to the Traverse for support.

Note: It is recommended that Sensors be installed just before or just after a conveyor drive unit as this is the most likely place for a chain fault to occur.

Installation

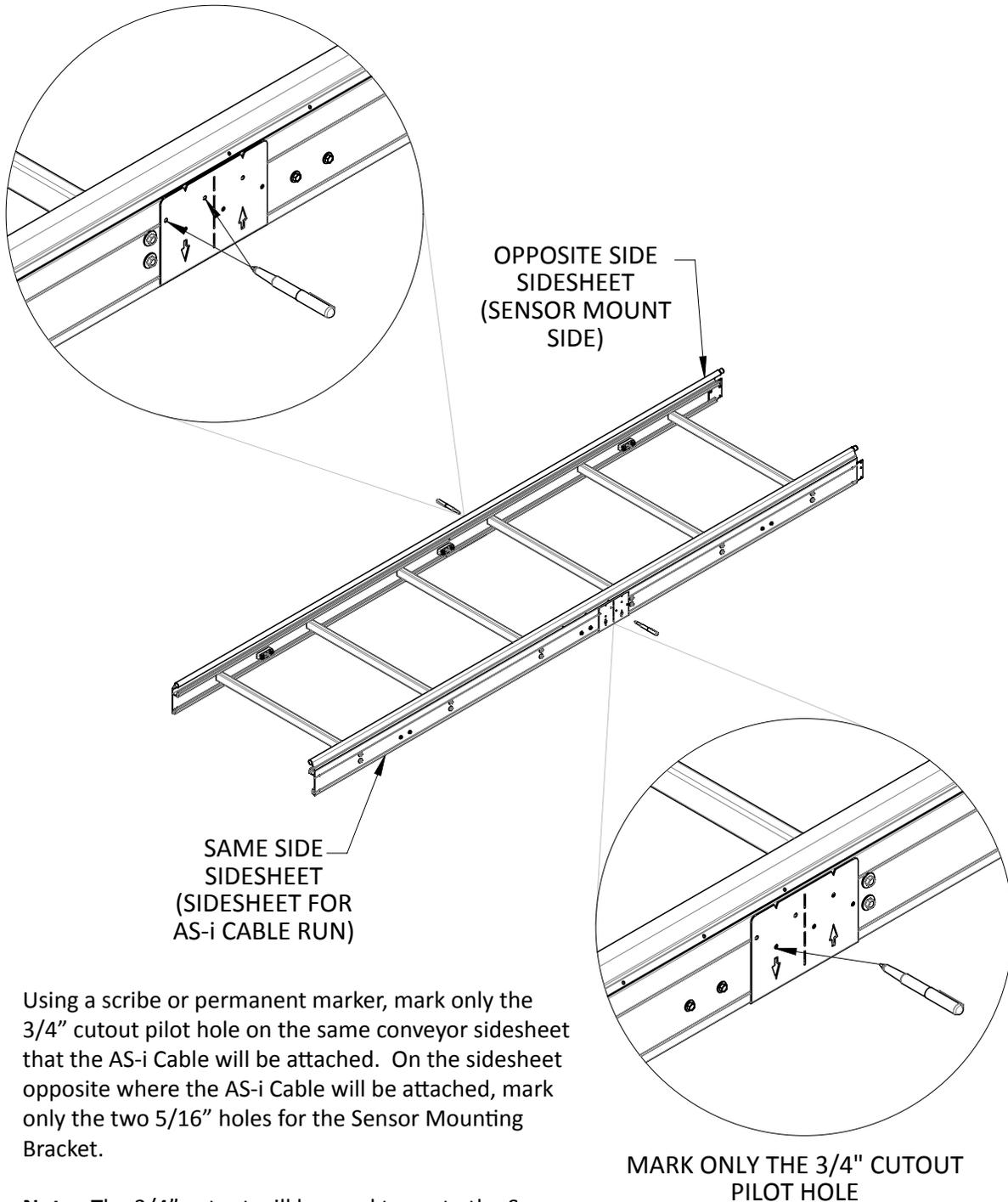


2. Using the hole template provided in the Installation Kit, firmly hold the hole template flush with the bottom of the conveyor sidesheet and align the V-Notch with the Sensor mounting mark.

Note: For top chain Sensor installations, use the right side of the hole template. For bottom chain Sensor installations use the left side of the hole template.

Note: It is important that the bottom lip of the hole template be held flush with the bottom of the conveyor sidesheet to ensure that the holes are in the proper position.

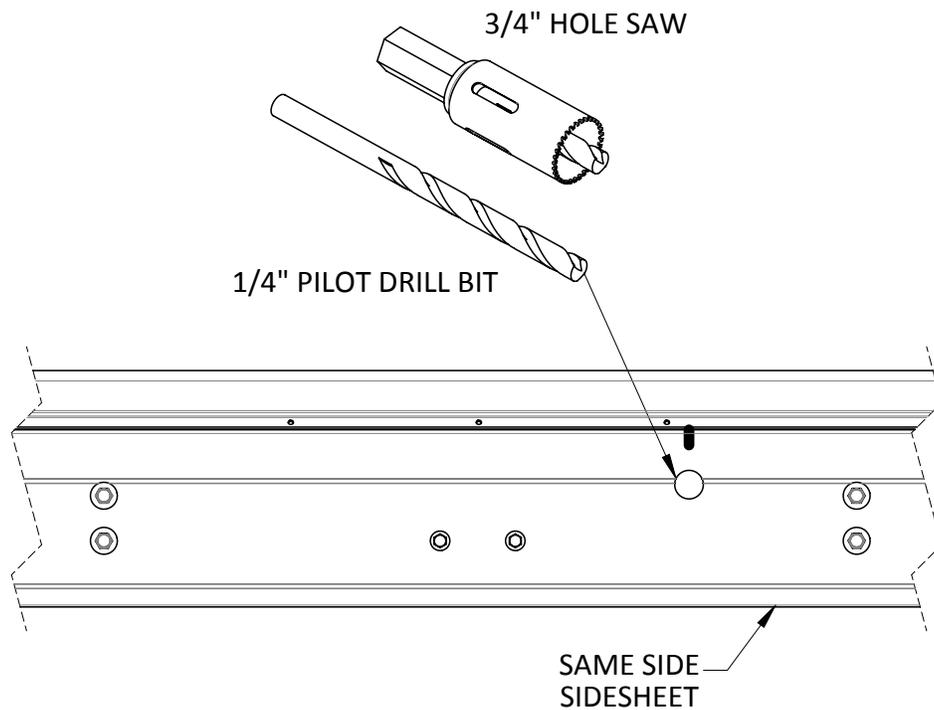
MARK ONLY THE SENSOR MOUNTING BRACKET HOLES



3. Using a scribe or permanent marker, mark only the 3/4" cutout pilot hole on the same conveyor sidesheet that the AS-i Cable will be attached. On the sidesheet opposite where the AS-i Cable will be attached, mark only the two 5/16" holes for the Sensor Mounting Bracket.

Note: The 3/4" cutout will be used to route the Sensor Cordset through the sidesheet to attach the Sensor to the AS-i Cable. The two 5/16" holes will be used for the Sensor Mounting Bracket.

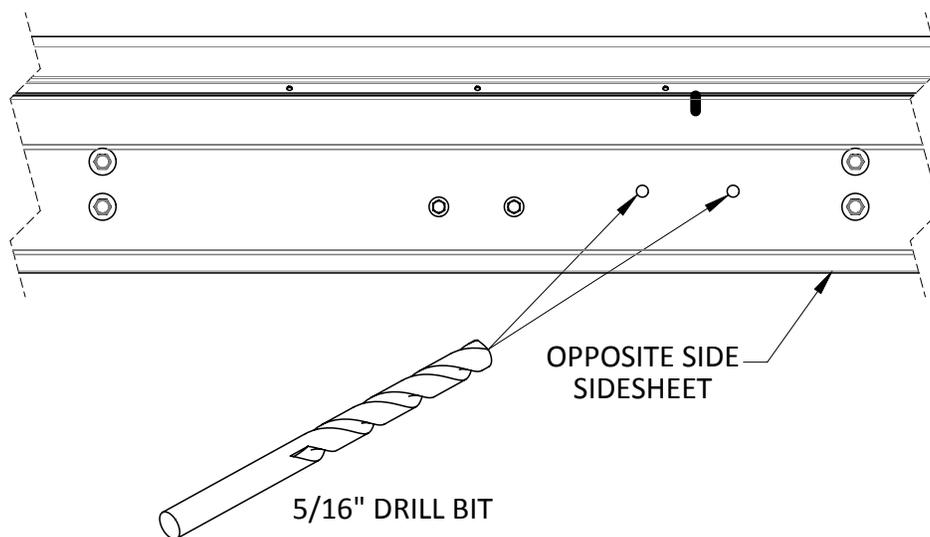
Installation



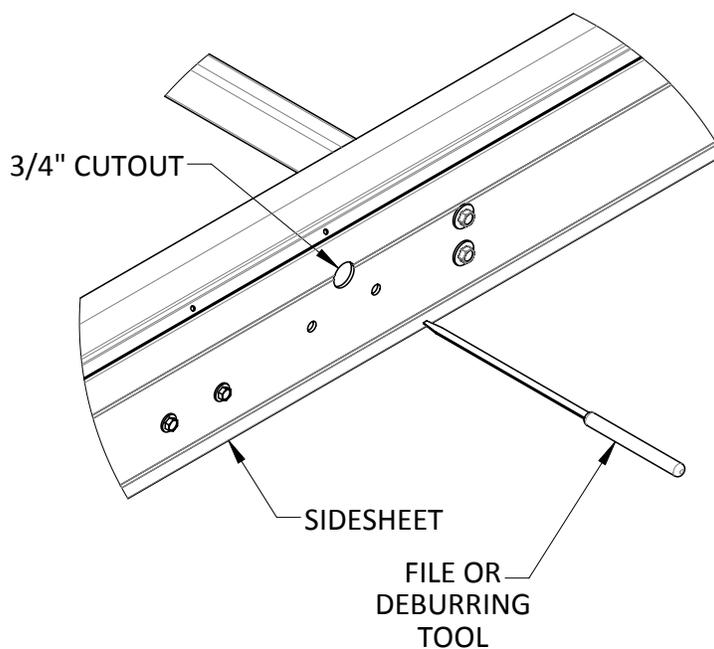
4. Using the drill bits provided in the Installation Kit, drill the 1/4" pilot hole in the conveyor sidesheet where the single hole mark for the 3/4" cutout was made.

Note: It is required that the 3/4" cutout be pre-drilled with a 1/4" pilot drill bit prior to using the 3/4" hole saw.

5. Using the hole saw provided, drill the 3/4" cutout in the conveyor sidesheet where the 1/4" pilot was made.



6. Using the drill bits provided in the Installation Kit, drill the two 5/16" holes in the conveyor sidesheet where the two Sensor Mounting Bracket holes were marked.



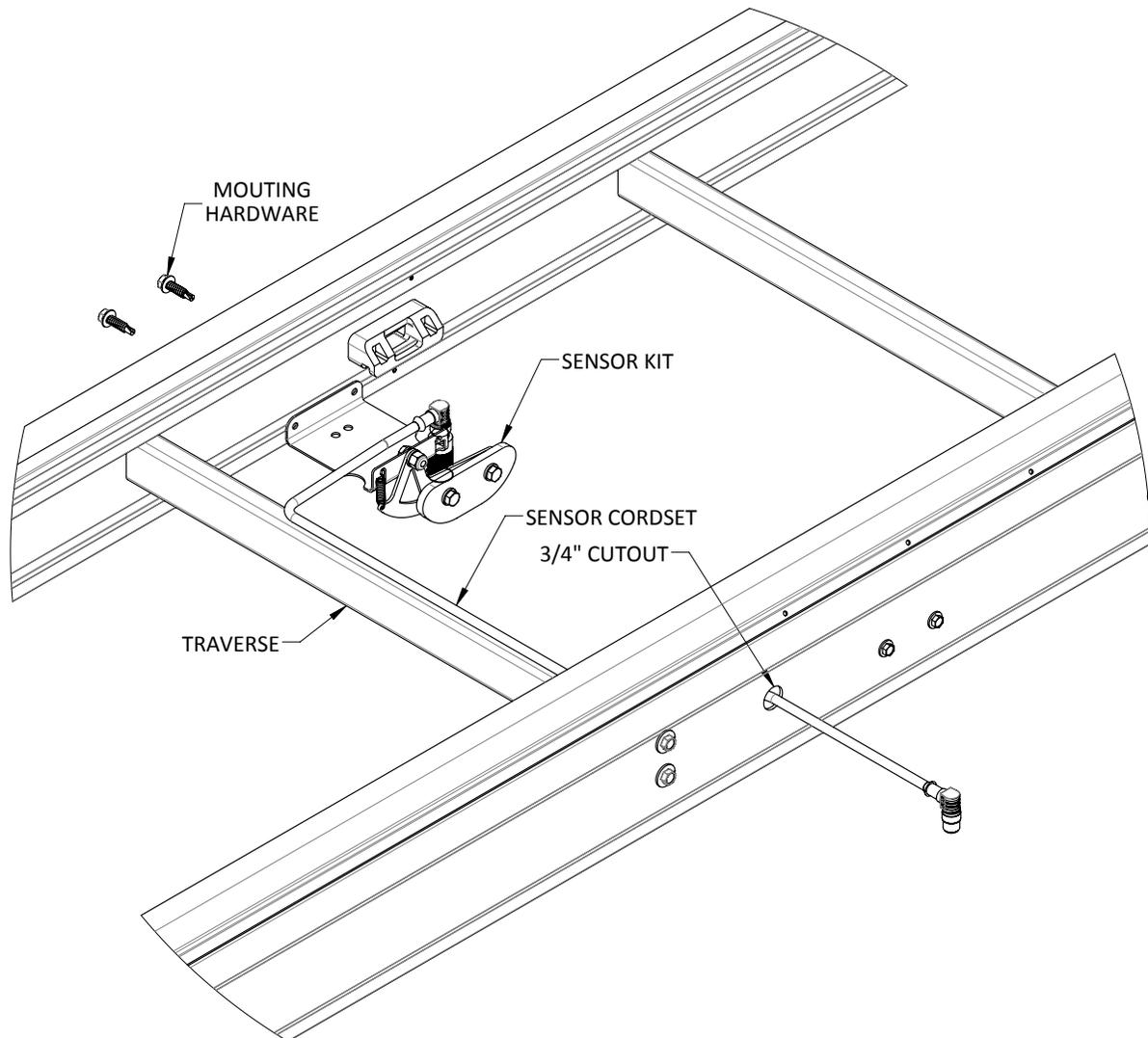
7. Using a file or de-burring tool, remove any sharp edges and burrs from the 3/4" cutout.

Note: The Sensor wiring will be routed through this 3/4" cutout. It is important that any sharp edges and burrs be removed from the hole to protect the wiring from damage.

Installation

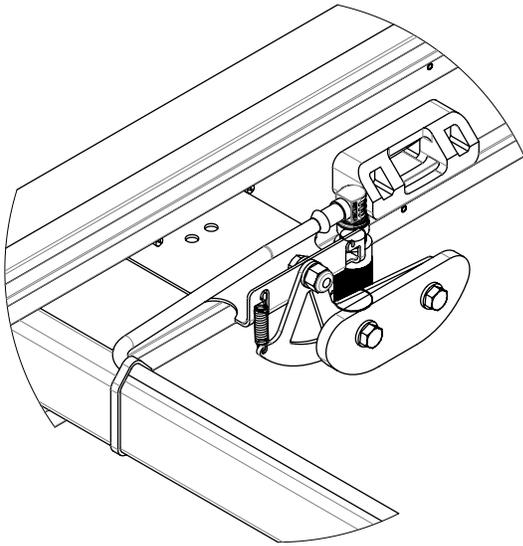
Mount Sensor Kit

Note: It will be easier to install the Sensor if the conveyor chain is removed, but it is not necessary to remove the conveyor chain to complete the installation.

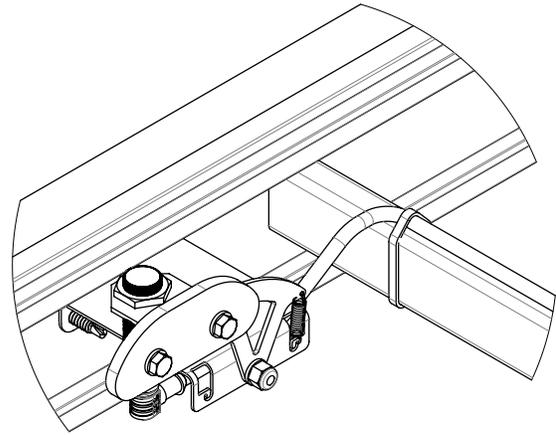


1. Position the assembled Sensor Kit, along the interior of the sidesheet and route the Cordset across the width of the conveyor and out through the 3/4" cutout.

Note: If the conveyor chain has not been removed, the assembled Sensor Kit can be pushed in between two conveyor chain rods. Care should be taken not to over bend the rods.



BOTTOM CHAIN SENSOR INSTALLATION



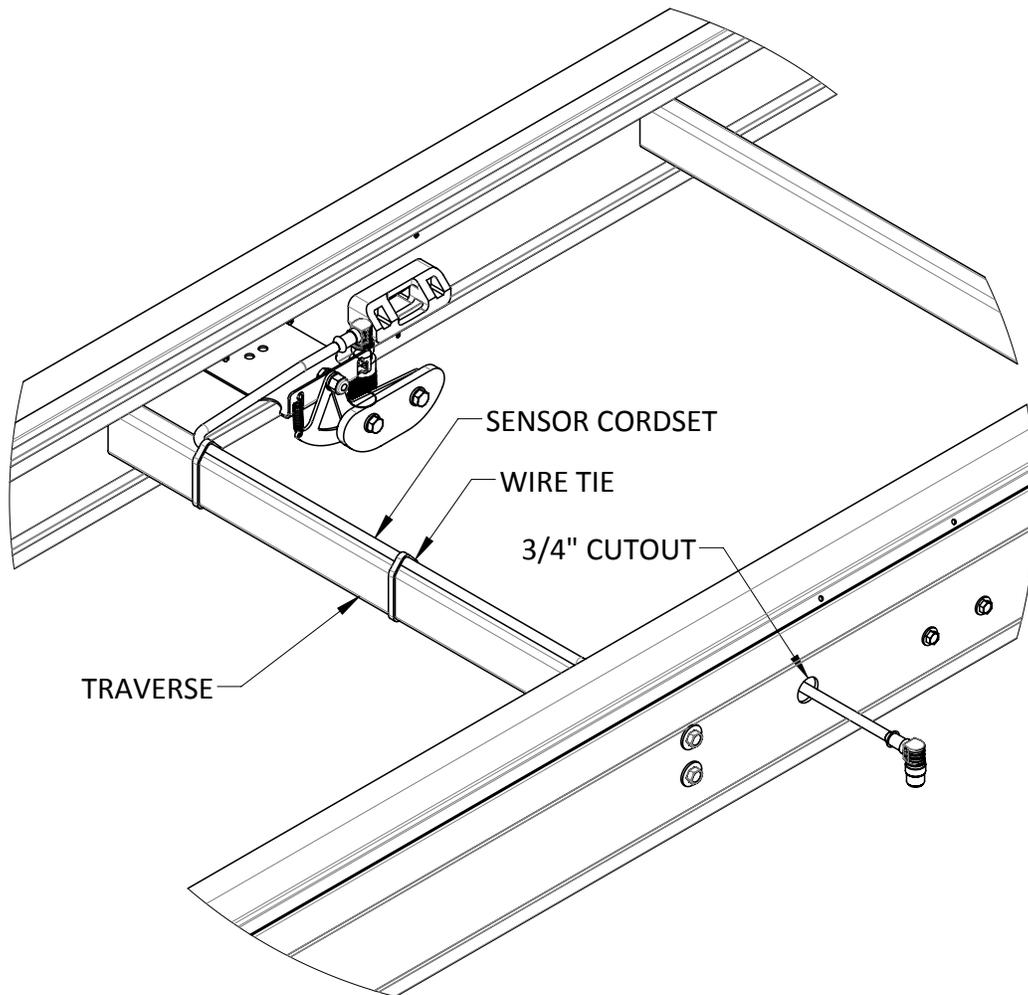
TOP CHAIN SENSOR INSTALLATION

2. Using the provided fasteners, secure the assembled Sensor Kit to the conveyor sidesheet.

Note: Care should be taken to properly orient the Sensor Mounting Bracket.

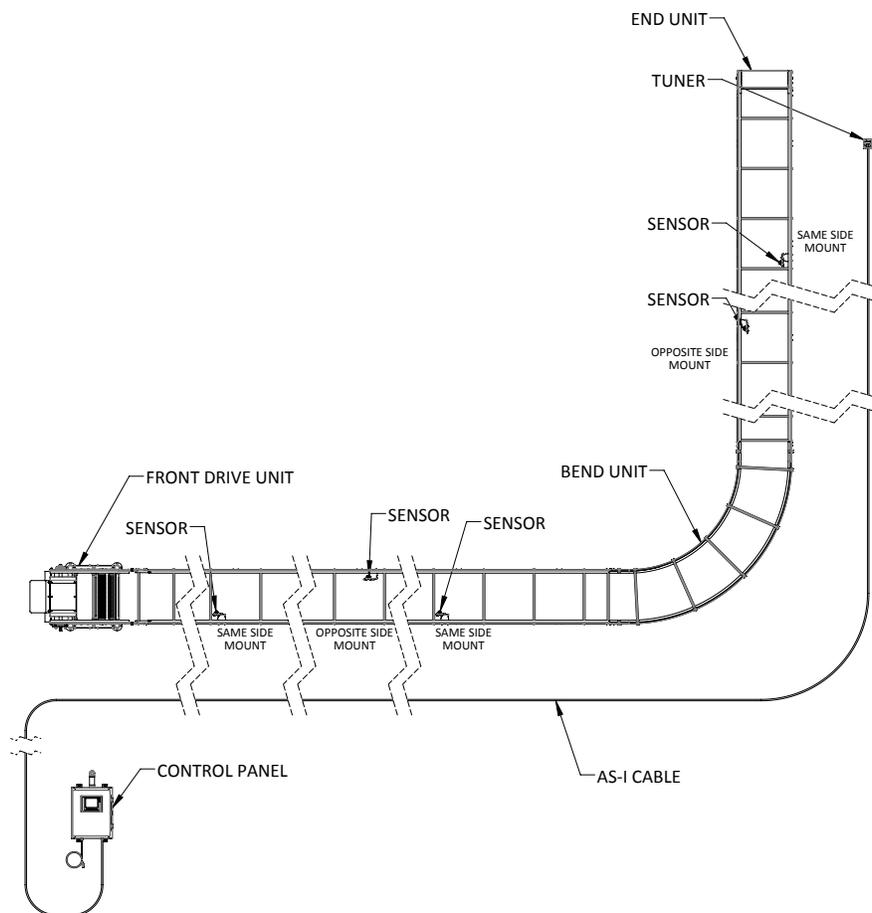
3. Securely tighten all fasteners.

Installation



4. Secure the Cordset to the Traverse across the width of the conveyor.
5. If the conveyor chain was removed, re-install the conveyor chain.

Install AS-i Cable

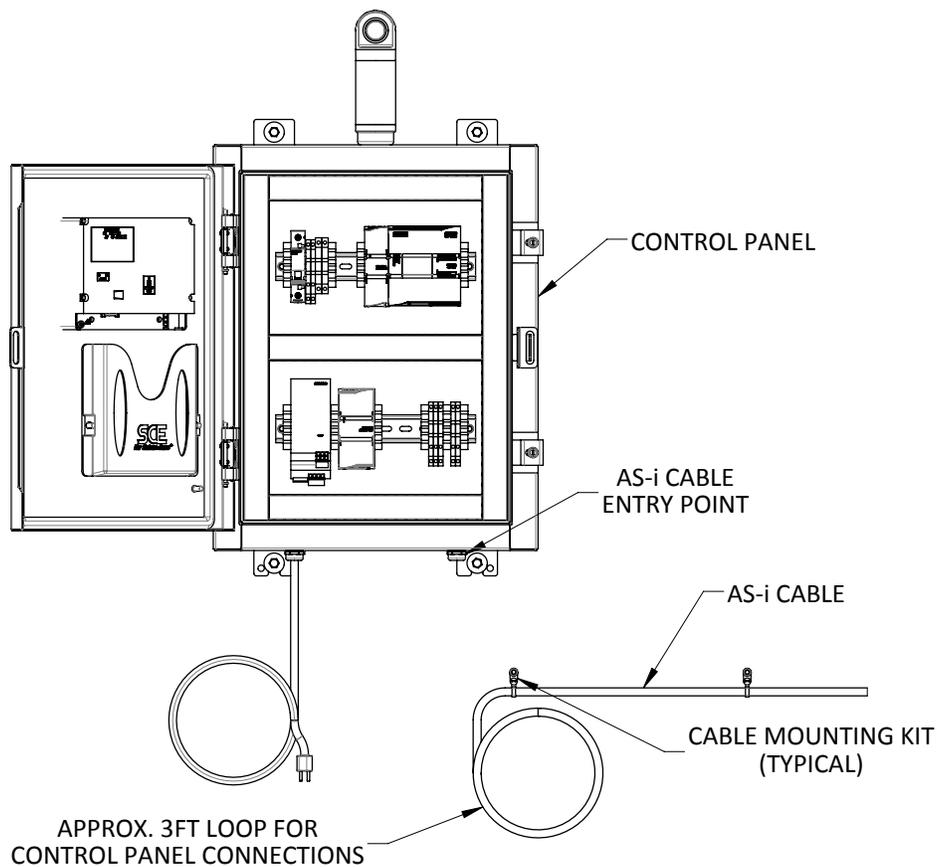


1. Identify the path that the AS-i Cable will take in routing from the Control Panel to the last Sensor position.

Note: The AS-i Cable network should not be routed through existing wireways, conduits, or other paths with existing high voltage circuits. It must be routed through an isolated path to maintain the integrity of the network communications.

2. Prepare the site for the AS-i Cable run by installing any necessary wireways, conduits, and/or other physical implements necessary to complete the wire installation.

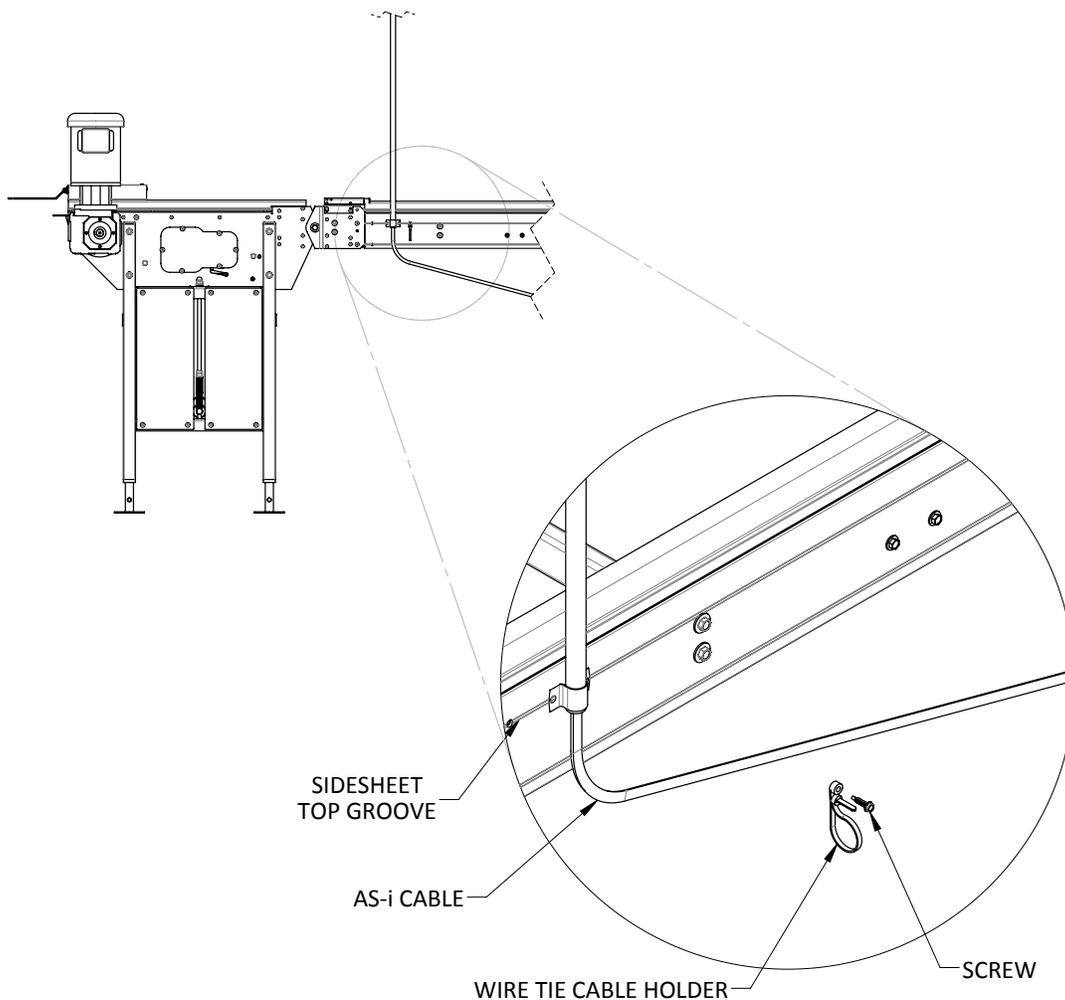
Installation



3. Starting at the Control Panel, begin routing the AS-i Cable, using the provided Cable Mounting Kits to support the cable.

Note: Leave approximately 3 feet of AS-i Cable coiled at the bottom of the Control Panel to allow for the internal wiring connections in the Control Panel.

Note: Cable Mounting Kits are provided based on the length of AS-i Cable supplied. A Cable Mounting Kit is supplied for every 5 feet of AS-i Cable.

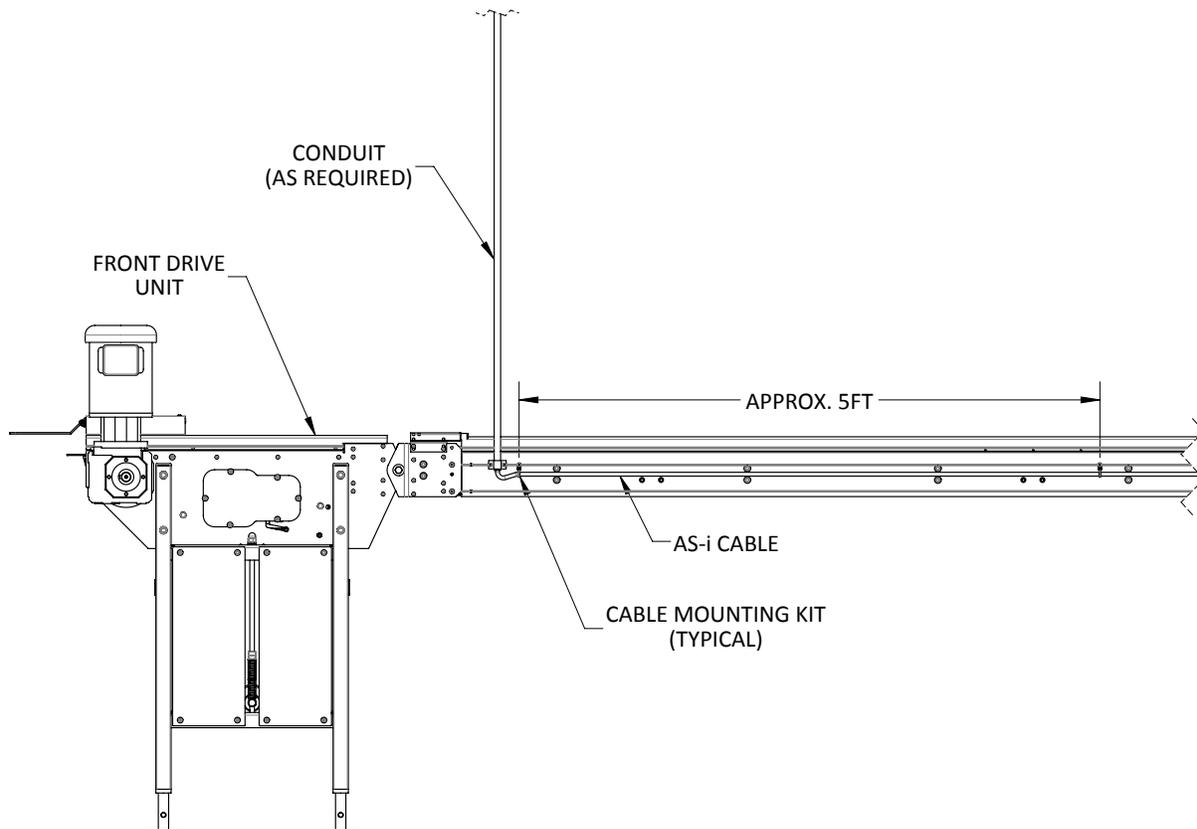


4. Continue routing the AS-i Cable along the predetermined path until the front of the conveyor is reached.
5. Attach a Cable Mounting Kit, centered over the top groove on the conveyor sidesheet and secure the AS-i Cable to the sidesheet.

Note: The conduit section shown in the diagram above is for illustration purposes only. Each individual installation may vary according to installation requirements and job conditions. Installation should adhere to all local, state and national codes and guidelines for electrical and mechanical installation.

Note: It is important that the AS-i Cable be secured at the point of entry onto the conveyor. The path of the AS-i Cable will align just under but parallel to the top groove of the sidesheet along the length of the conveyor system.

Installation

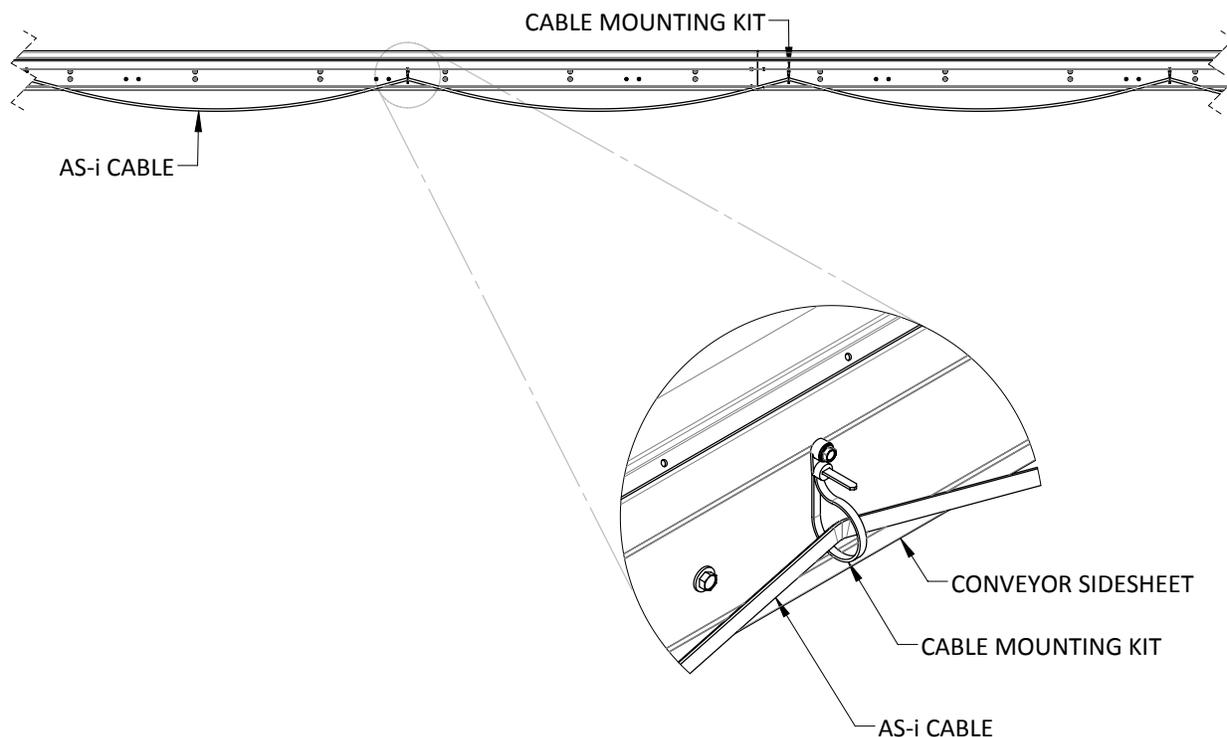


6. Continue by attaching the Cable Mounting Kits to the conveyor sidesheet at approximately 5 feet intervals making sure to leave the Cable Mounting Kit wire tie loose.

Note: Cable Mounting Kits and their mounting fasteners must be loose to allow for AS-i Cable routing.

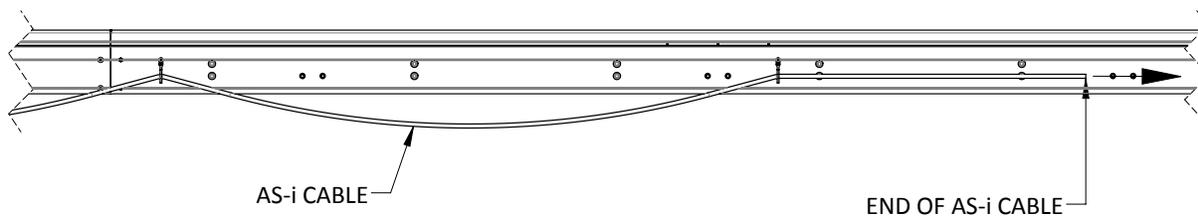
Note: The conduit section shown in the diagram above is for illustration purposes only. Each individual installation may vary according to installation requirements and job conditions. Installation should adhere to all local, state and national codes and guidelines for electrical and mechanical installation.

Note: Cable Mounting Kits are provided based on the length of AS-i Cable supplied. A Cable Mounting Kit is supplied for every 5 feet of AS-i Cable along with extra for Bend Units.



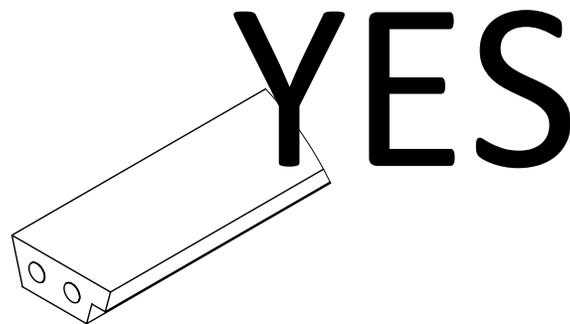
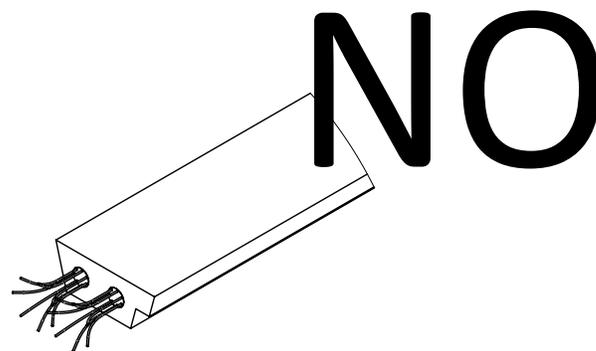
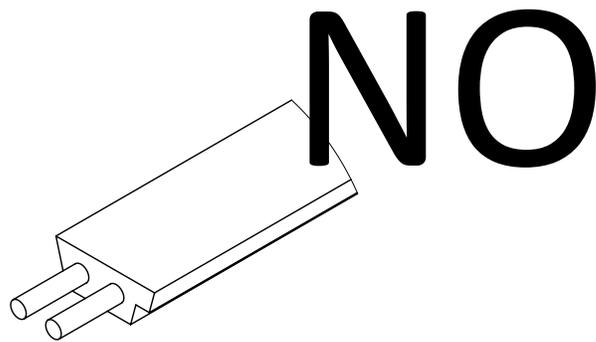
7. Route the AS-i Cable through the loose Cable Mounting Kits.

Note: The AS-i Cable can have slack when it is routed through the loose Cable Mounting Kits



8. Starting at the front of the conveyor pull all of the slack toward the end of the system and tighten Cable Mounting Kits as they are reached.

Note: The Cable Mounting Kits must be securely fastened after tightening.

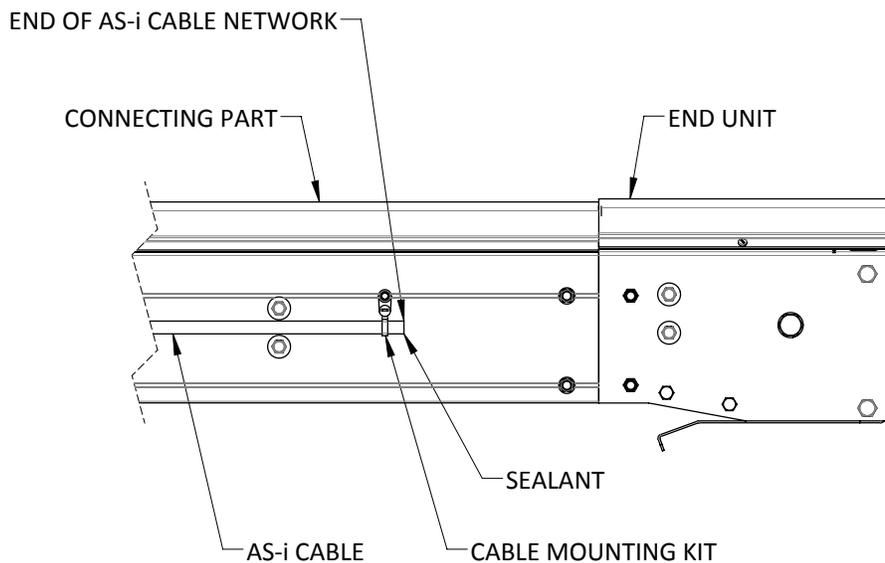


9. Continue tightening the Cable Mounting Kits until the end of the AS-i Cable is reached.

Note: If the end of the conveyor is reached, the AS-i Cable can be cut and any excess cable discarded.

10. Examine the end of the AS-i Cable to verify that the cable is cleanly cut with no exposed copper ends or frayed wire strands. If necessary, re-cut the end of the cable with a sharp pair of wire cable cutters.

Note: It is extremely important that the end of the AS-i Cable not have exposed copper wire or frayed wire strands. The end of the cable must be cleanly severed.



11. Dress the end of the AS-i Cable with the provided sealant (Tool Dip) and allow the sealant to cure.

Note: The end of the AS-i Cable should be thoroughly coated in the liquid sealant to protect the end of the cable from the environment and to prevent possible shorting of the copper pair.

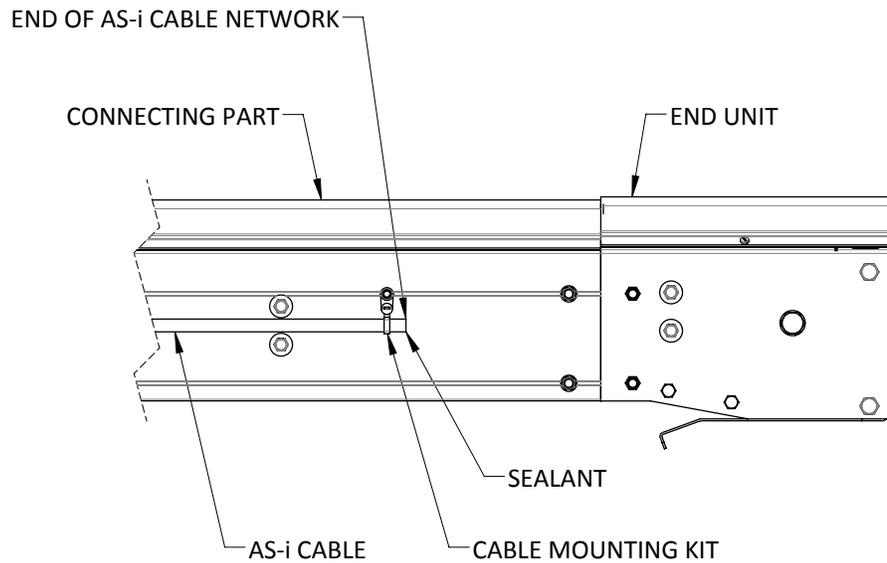
12. Securely fasten the AS-i Cable to the conveyor sidesheet using the provide Cable Mounting Kit.

Note: The AS-i Cable should be secured near the end of the cable to prevent the cable from sagging on the end.

Installation

Install Tuner

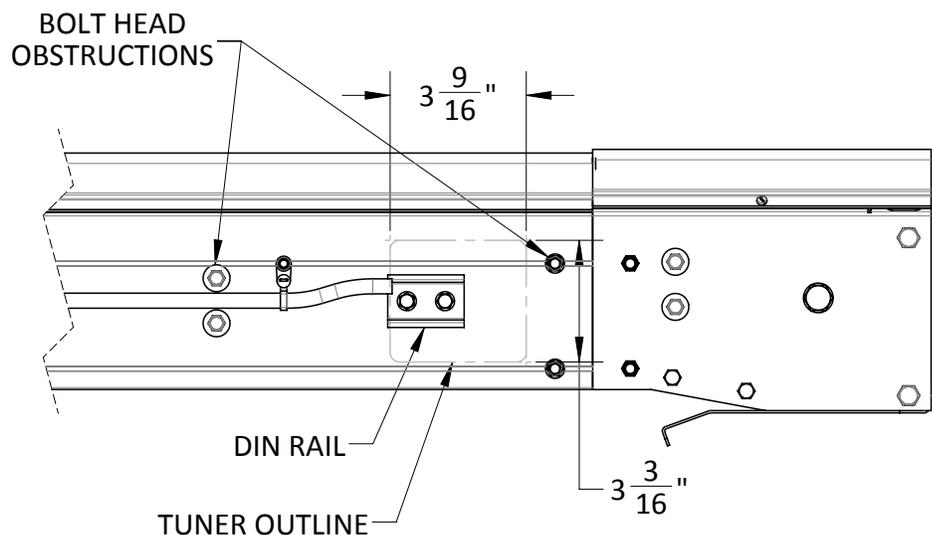
Note: Not all ChainKeeper systems require a Tuner Kit. Refer to the system order or shipper Packing List to determine if a Tuner Kit has been provided for this system.



1. Identify the end of the AS-i Cable network.

Note: The Tuner is installed on the conveyor sidesheet at the end of the AS-i Cable network opposite that of the Control Panel.

Note: The installation of the AS-i Cable must be completed prior to installing the Tuner. Refer to the "Install the AS-i Cable" section of the Installation Instructions for more information.

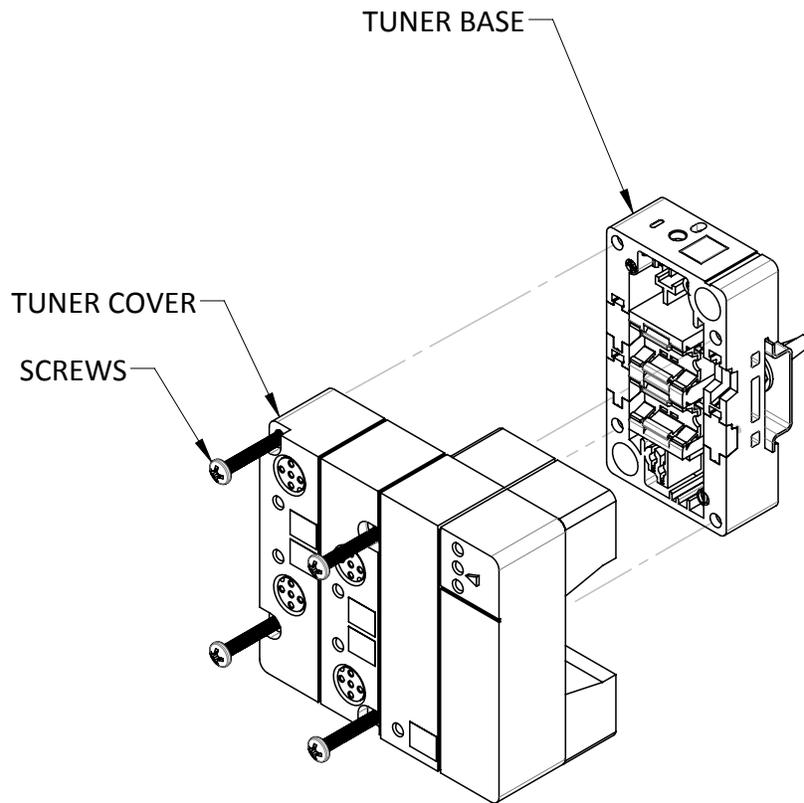


2. Attach the DIN Rail section to the conveyor sidesheet and securely fasten with the provided fasteners.

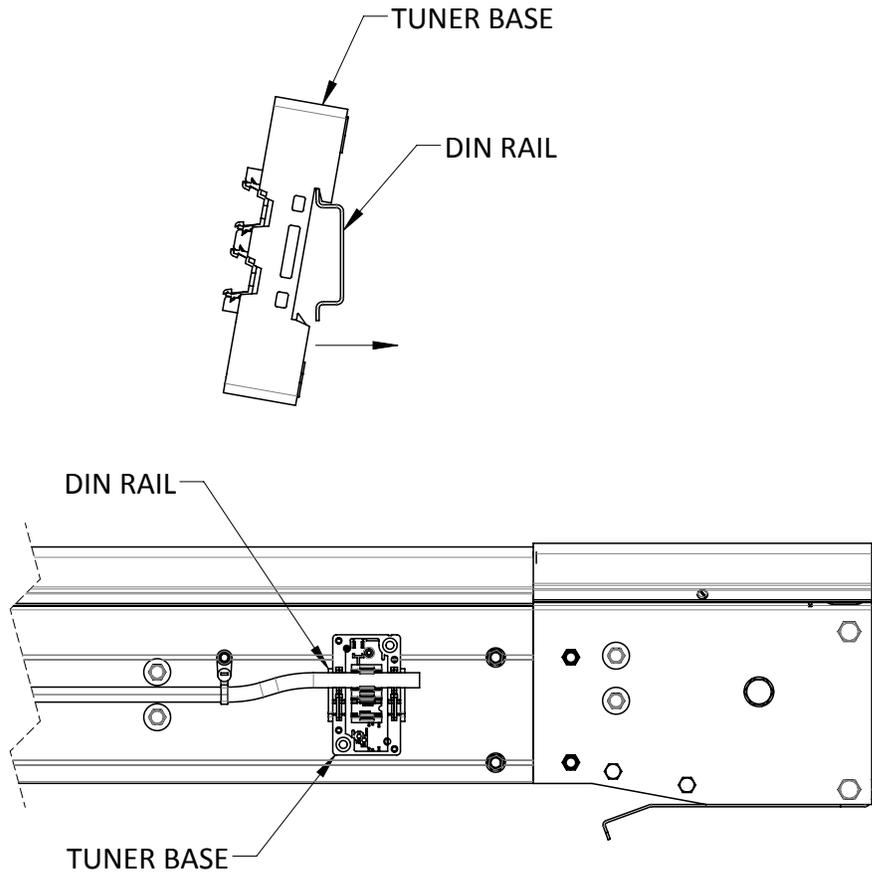
Note: The DIN Rail should be mounted approximately $2\frac{5}{16}$ inches from the bottom edge of the conveyor sidesheet. This will provide the necessary clearance for the mounting of the Tuner.

Note: The Tuner will overhang the DIN Rail on three sides. Be certain that there is substantial clearance from any obstructions prior to attaching the DIN Rail to the conveyor sidesheet.

Installation

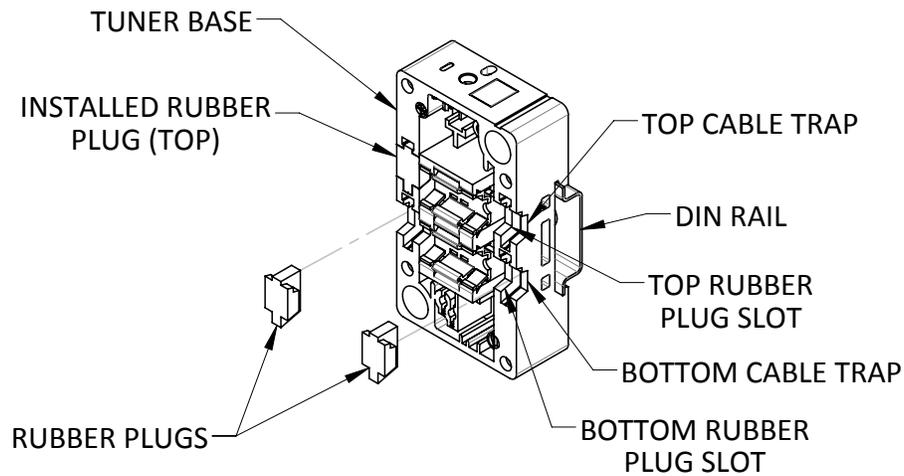


3. Loosen the four fasteners securing the Tuner Base to the Tuner and remove the Tuner Base from the Tuner.



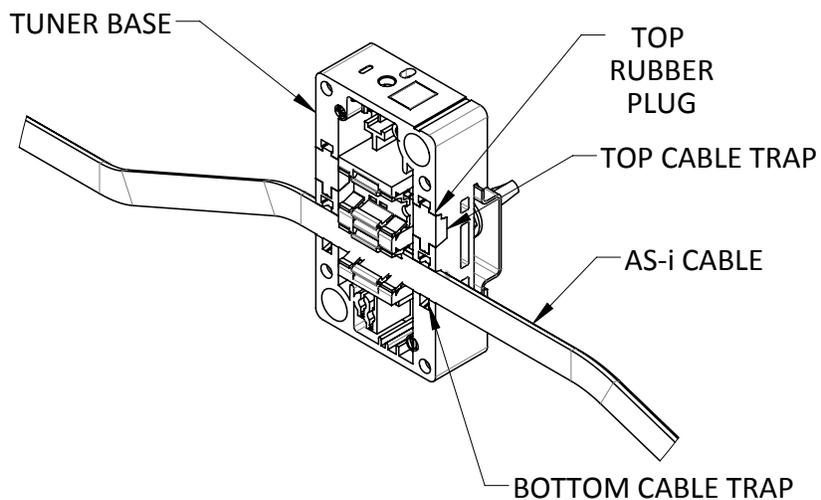
4. Attach the Tuner Base to the DIN Rail and securely snap into position.

Installation



5. Remove the rubber plugs from the Tuner Base blocking the bottom cable trap.

Note: It is important that the plugs in the top cable trap be left in place. If either side of the top cable trap is without a plug, use the plugs removed from the bottom cable trap to replace the top plugs.

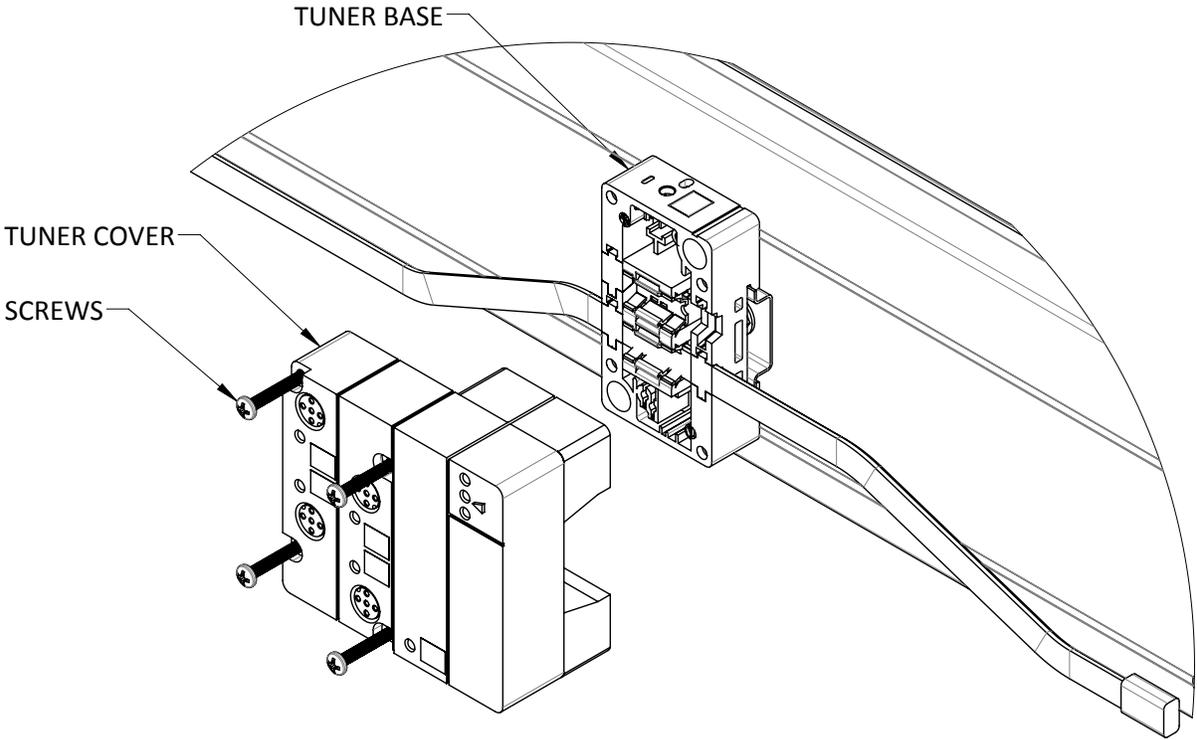


6. Position the AS-i Cable over the Tuner Base and snap the cable into the bottom cable trap.

Note: Be certain that the AS-i Cable is thoroughly snapped into the bottom cable trap. The cable will be seated when the Tuner is re-attached to the Tuner Base.

Note: The path of the AS-i Cable will need to be curved upward to position over the bottom cable trap. If necessary, reposition the Cable Mounting Kit to allow the cable to be curved upward.

Installation

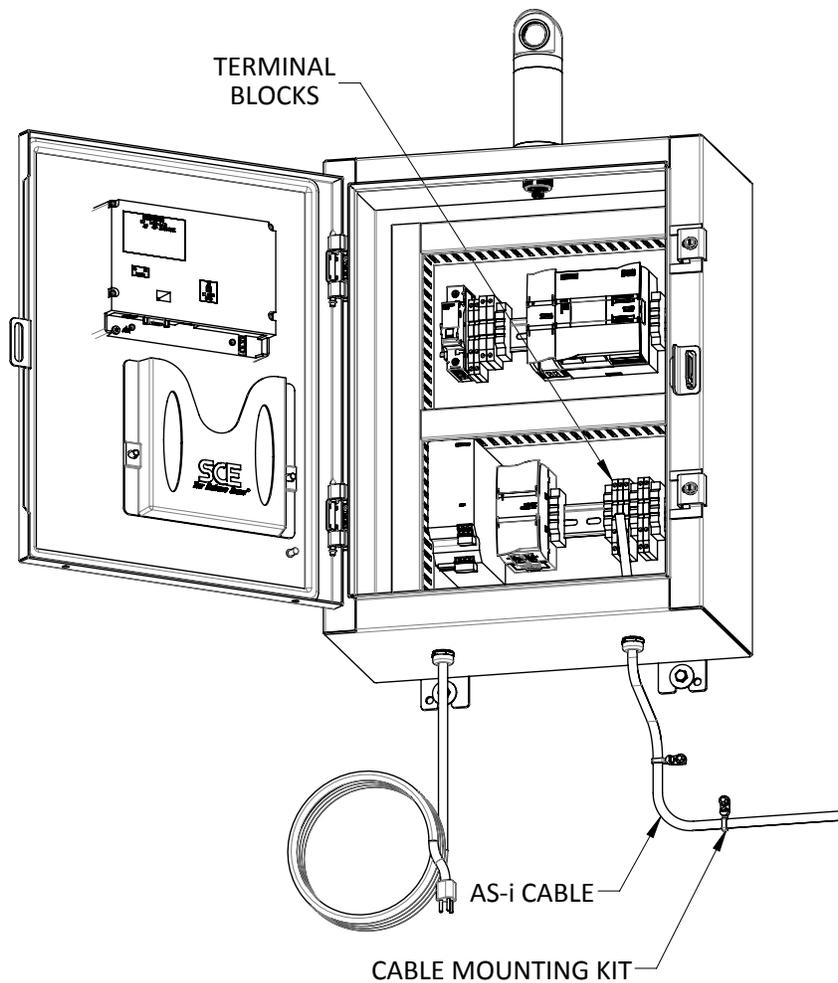


7. Re-attach the Tuner to the Tuner Base and securely tighten all fasteners.

Electrical Installation Instructions

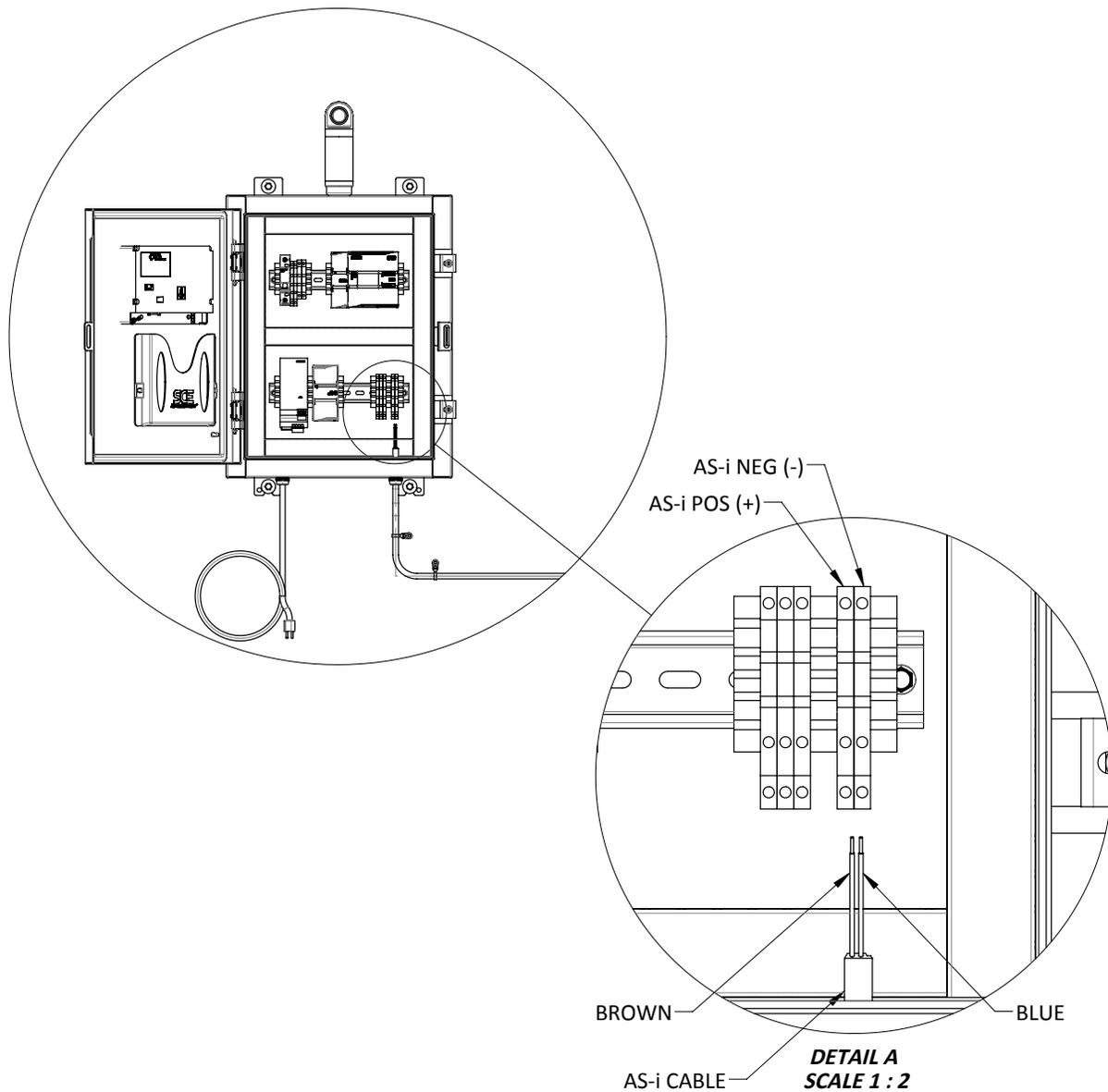
Wiring the Control Panel

Terminating the AS-i Cable Network



1. Route the AS-i Cable into the Control Panel enclosure and secure the cable in place using the provided Cable Mounting Kits.

Installation



2. Carefully remove the outer jacket of the AS-i Cable, exposing the two inner conductors.
3. Remove approximately 1/2 inch of insulation from each of the two conductors.
4. Terminate the AS-i Cable conductors into the provided terminal blocks.

Note: The Brown conductor will terminate to AS-i Positive and the Blue conductor will terminate to AS-i Negative.

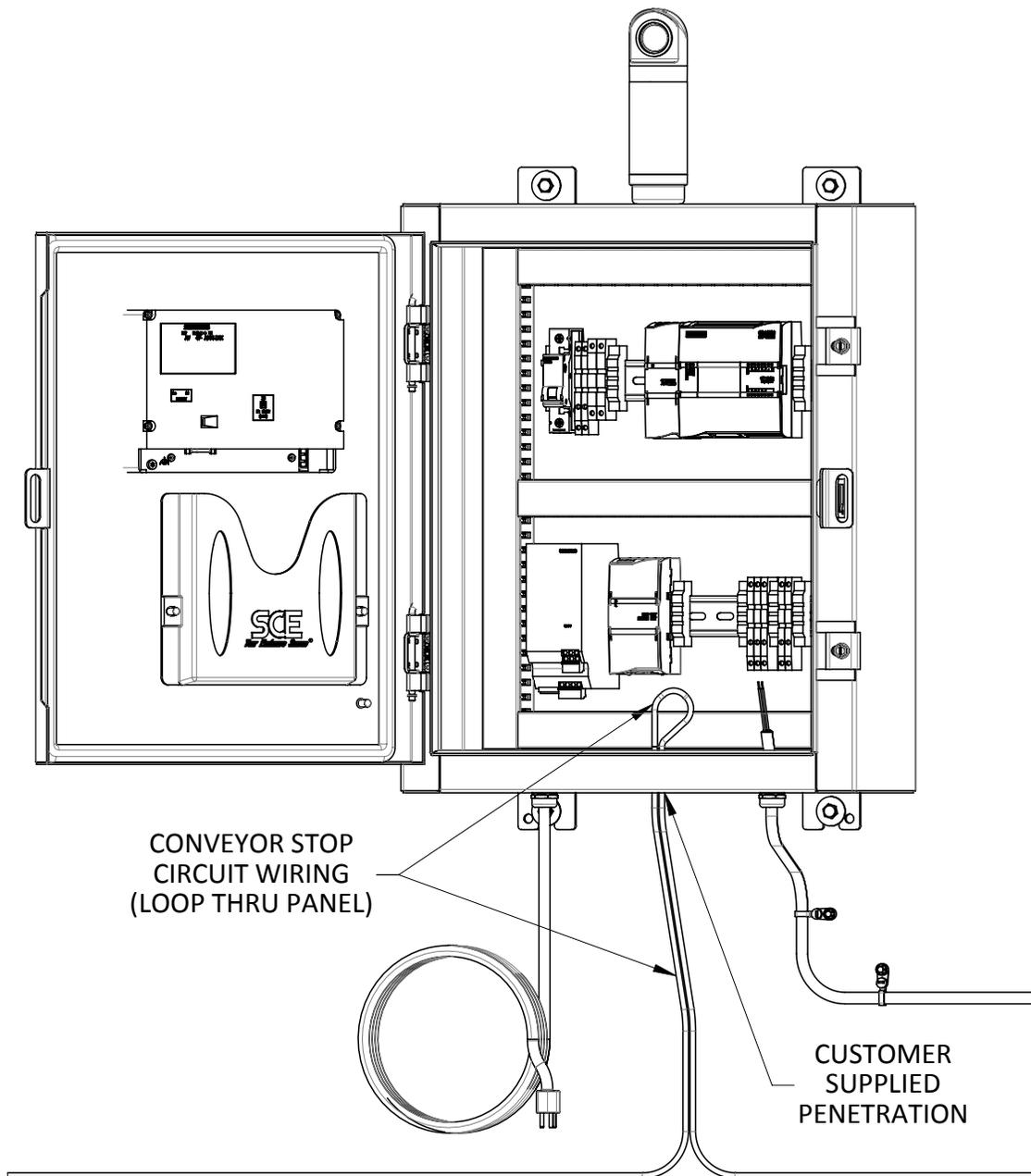
Connecting the Conveyor System Stop Circuit

Note: The use of the conveyor system STOP circuit is optional, but recommended to realize the full potential of the ChainKeeper system. If the STOP circuit is not used, the ChainKeeper system will detect and alarm in case of a fault, but will not be able to stop the conveyor.

Note: The STOP circuit power rating should not exceed 2A resistive load, 30W DC/200W AC. If the rating of the STOP circuit exceeds these limits, the use of an auxiliary relay will be required. Contact the factory for assistance.

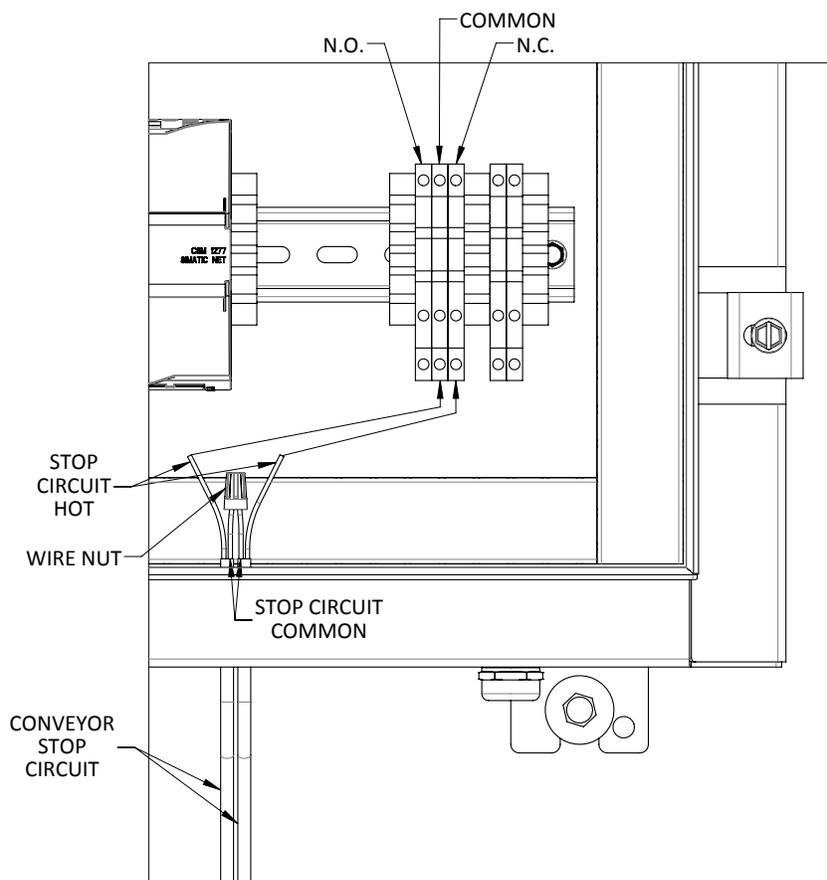
Note: These installation instructions make the assumption that the conveyor system STOP circuit is a series wired, normally closed circuit which faults if any series device opens the circuit. Consult the factory for STOP circuit designs that operate in any manner other than described.

Installation



1. Loop the conveyor system's STOP circuit to the ChainKeeper Control Panel.

Note: The Control Panel will be inserted into the STOP circuit as a series device. Upon any detected fault, the Control Panel will break the circuit to generate a STOP.



2. Cut the conveyor system STOP circuit and separate the control leads.

Note: It is only necessary to cut the “switched” lead of the STOP circuit. The STOP circuit common can be left uncut.

3. Wire the STOP circuit to the Control Panel’s normally open dry contact relay output.

Note: The Control Panel enclosure is designed to operate as a “fail-safe” STOP device. If the Control Panel loses power or experiences an electrical malfunction, the normally open contact will release, breaking the STOP circuit.

4. Power the conveyor system and the ChainKeeper system and test the installation.

Note: To test operation, disconnect any active Sensor while the system is in operation to generate a fault. Upon generation of a fault, the Control Panel should alarm and the conveyor system should stop.

Note: The conveyor system will not run until the ChainKeeper system is powered and any faults cleared. Refer to the “Operation” section of the manual for information on configuring and operating the ChainKeeper system.

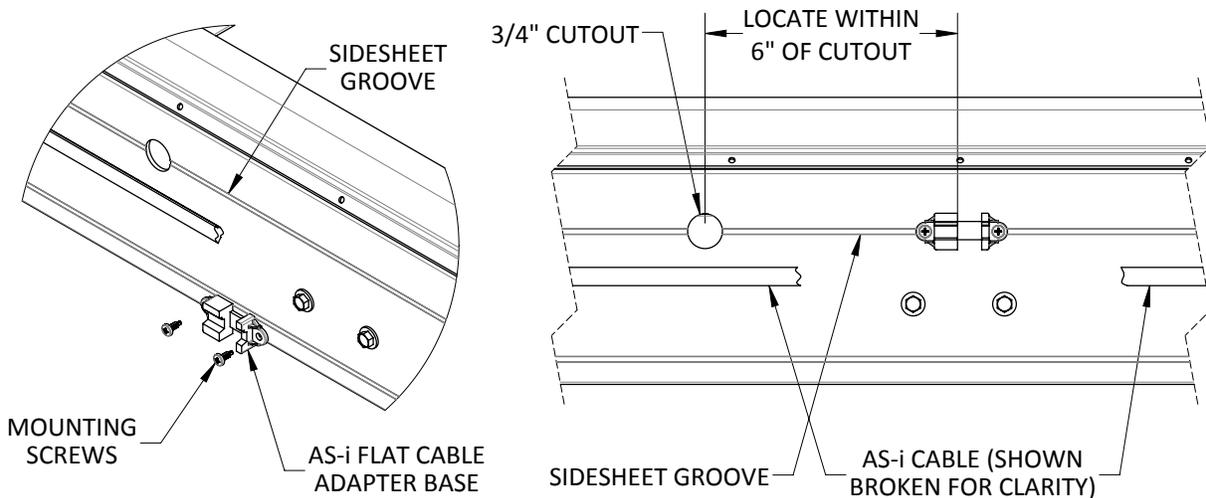
Installation

Powering the Control Panel

Control Panel power delivery is accomplished using a standard convenience outlet. An “always on” grounded convenience outlet should be located within 4 feet of the Control Panel. Energy consumption is less than 200Watts.

Note: It is extremely important that power to the Control Panel not be interrupted if the conveyor system Stop circuit is controlled by the ChainKeeper System. If a power loss is experienced by the Control Panel, the conveyor system will stop.

Wiring the Sensors



1. Identify the next Sensor position.

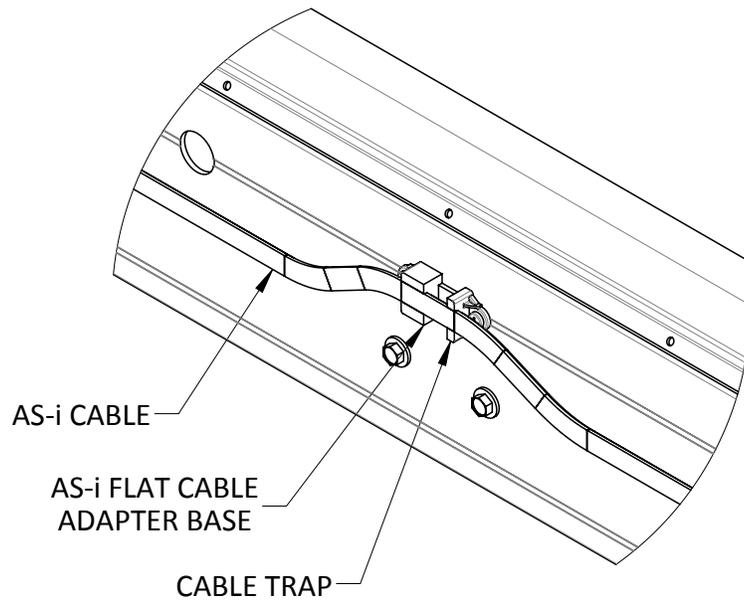
Note: The installation of the Sensors and the AS-i Cable must be completed prior to starting the wiring of the Sensor. Refer to the “Install the Sensors” and “Install the AS-i Cable” sections of the Installation Instructions for more information.

2. Attach the AS-i Flat Cable Adapter base to the conveyor sidesheet in the sidesheet top groove using the provided self-tapping fasteners.

Note: Do not confuse the self-tapping fasteners provided in the kit with the self-threading fasteners that are provided in the AS-i Flat Cable Adapter bag.

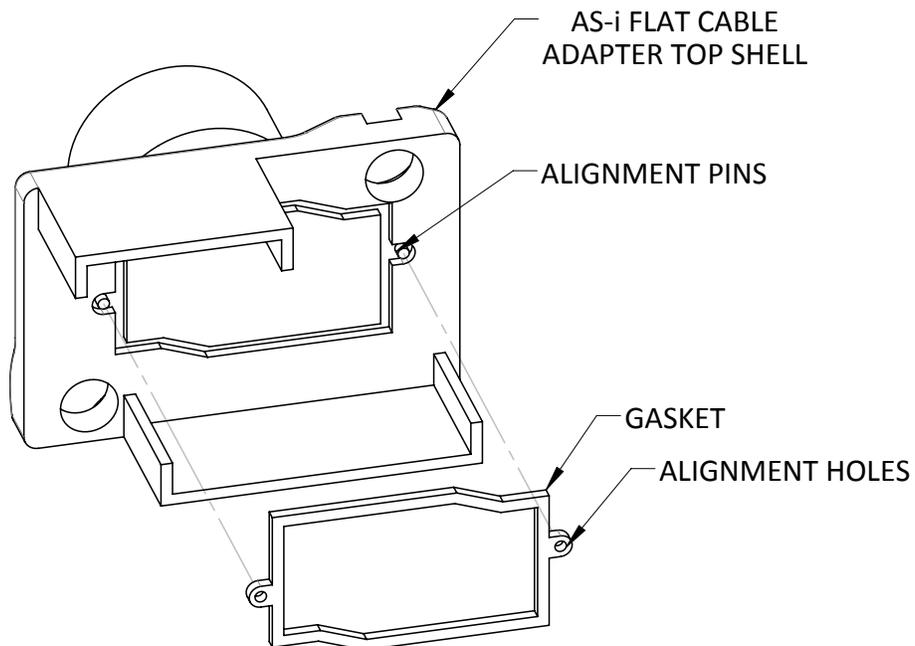
Note: The AS-i Flat Cable Adapter should be located within 6 inches of the sensor 3/4" cutout. Positioning the adapter too far from the 3/4" cutout may result in the supplied Cordset being too short to reach the Sensor.

Installation



3. Position the AS-i Cable over the cable trap on AS-i Flat Cable Adapter base and snap into place.

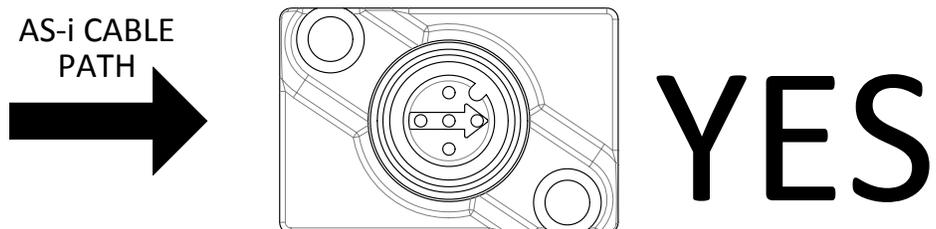
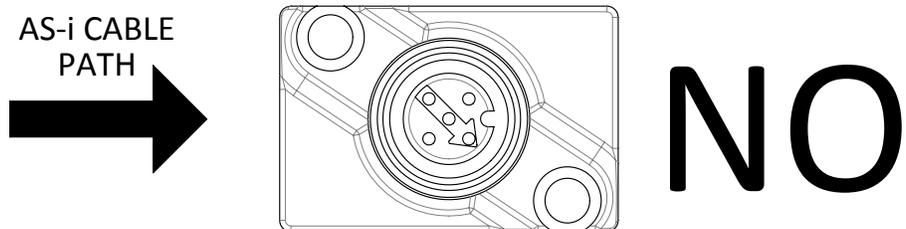
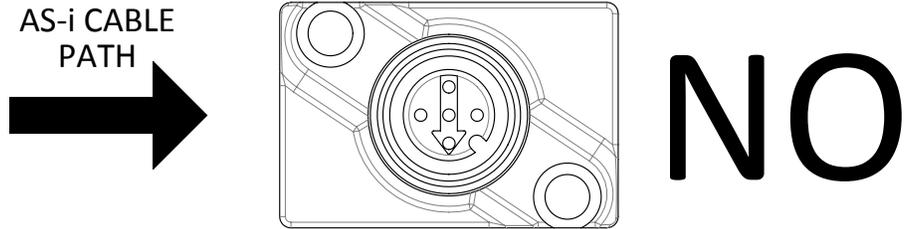
Note: Make sure the AS-i Cable is fully seated in the adapter base. The cable is designed to snap into the base.



4. Assemble the AS-i Flat Cable Adapter top shell and the adapter gasket, making certain to position the alignment holes in the gasket over the alignment pins on the adapter to shell.

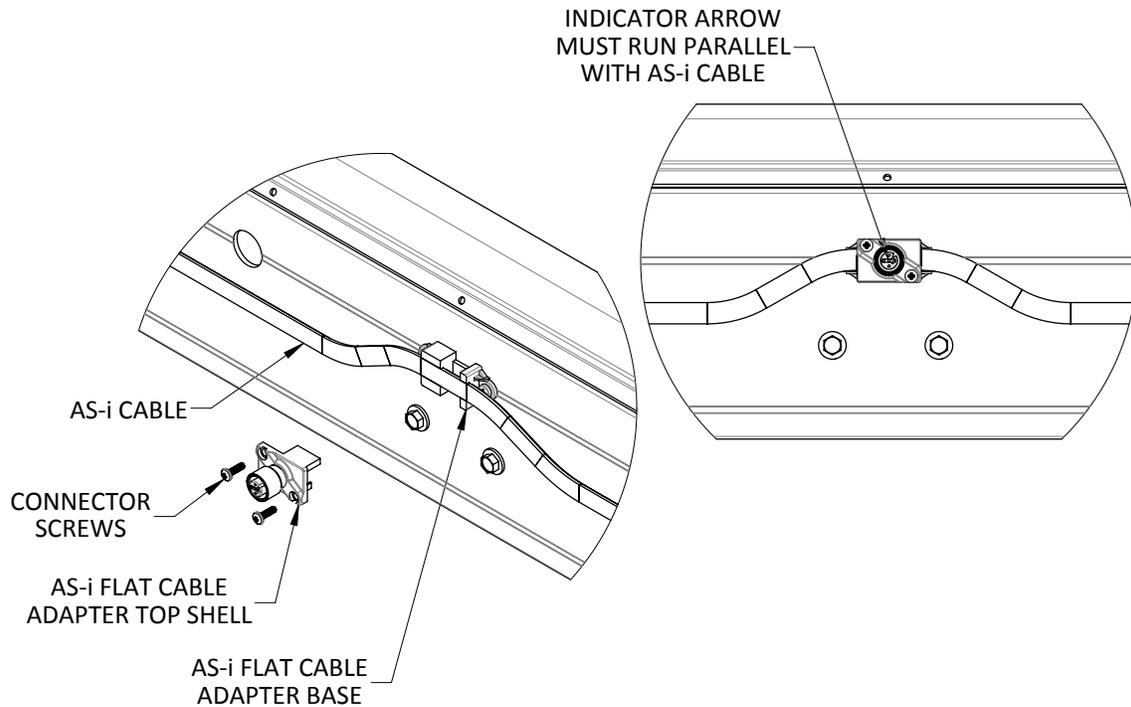
Note: It is imperative that the gasket be properly aligned on the adapter to ensure a liquid tight seal. Improper positioning of the gasket can result in premature failure of the electrical connection and Sensor malfunction.

Installation



5. Verify that the indicator arrow on the AS-i Flat Cable Adapter is oriented horizontally, pointing in the same direction as the path of the AS-i Cable. Use a large flat bladed screw driver to make any necessary adjustments.

Note: If the arrow is pointing down, or skewed at an angle, the adapter may fail to make a proper electrical connection with the AS-i Cable.

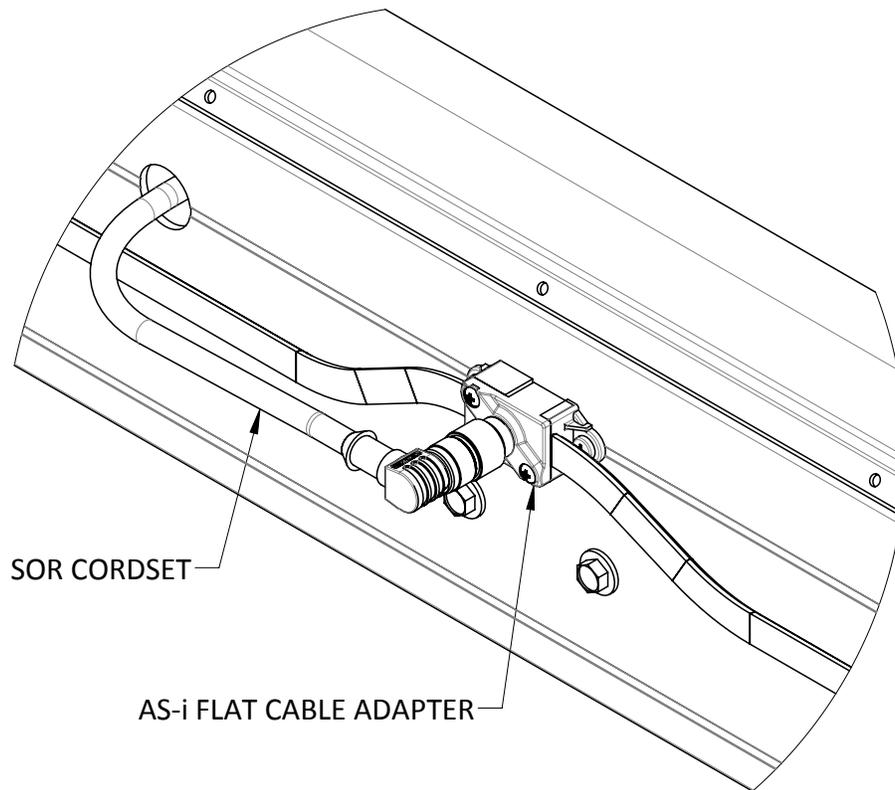


6. Securely attach the AS-i Flat Cable Adapter to shell to the adapter base with the provided fasteners.

Note: Make sure to use the self-threading fasteners provided in the AS-i Flat Cable Adapter parts bag when securing the adapter to the base.

Note: Verify that the indicator arrow on the adapter points toward the path of the AS-i Cable, and did not move during installation of the top shell to the base. If the arrow moved, remove the adapter and repeat the steps above to orient the arrow in the proper direction.

Installation



7. Thread the Sensor Cordset onto the AS-i Flat Cable Adapter and hand tighten.

Note: When attaching the Sensor Cordset to the AS-i Flat Cable Adapter the male keyway on the Sensor Cordset connector must align with the female keyway on the AS-i Flat Cable Adapter.

8. Secure any excess Cordset length using the provided wire ties.

System Configuration Instructions

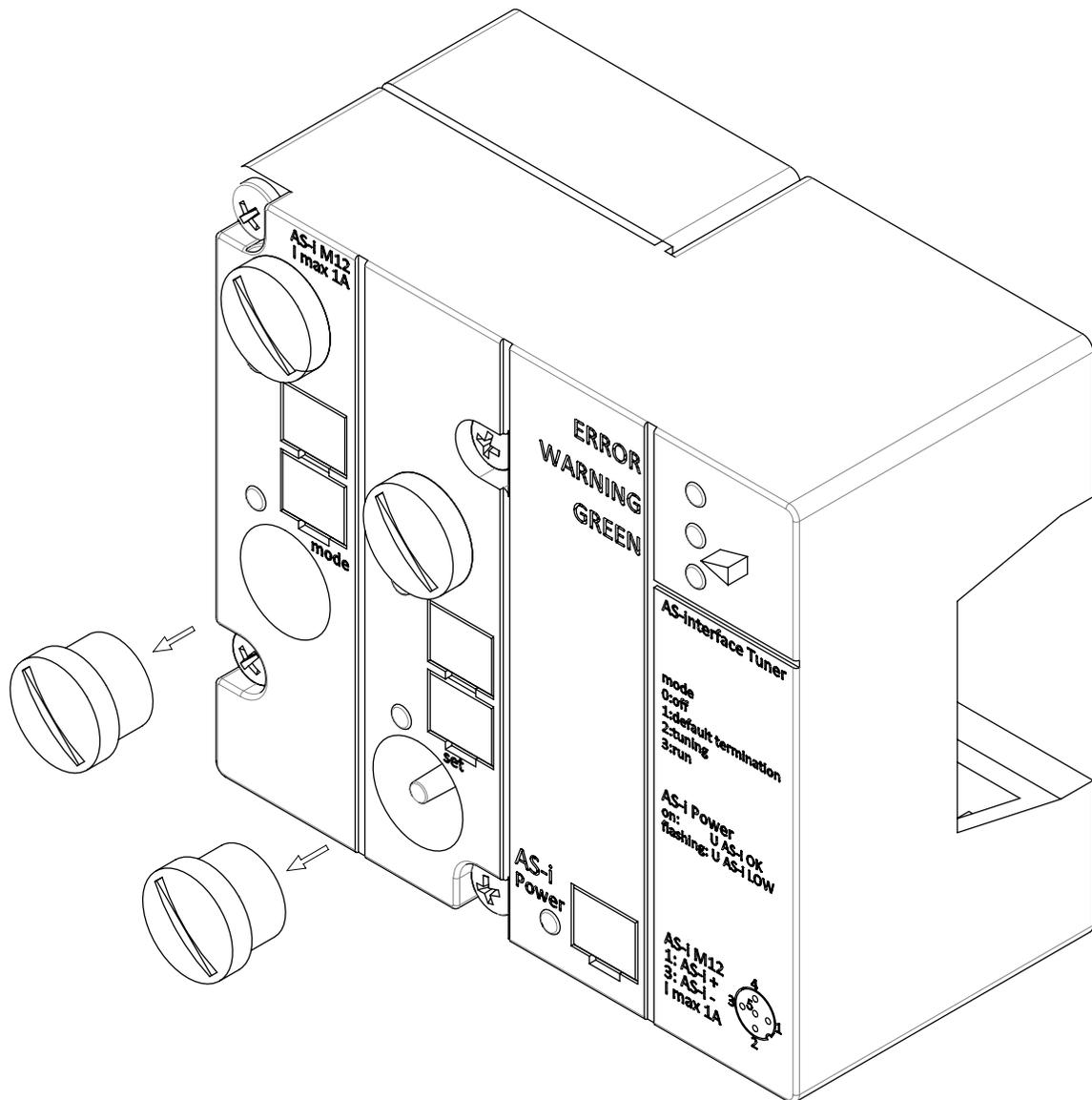
Note: The Control Panel will require power to configure the system settings. It is not necessary for the AS-i Cable network or the conveyor system Stop circuit to be connected to the Control Panel to complete the system configuration.

Note: If the AS-i Cable is connected to the Control Panel, the installation of the AS-i Cable should be completed and no work being performed on the network prior to powering the Control Panel.

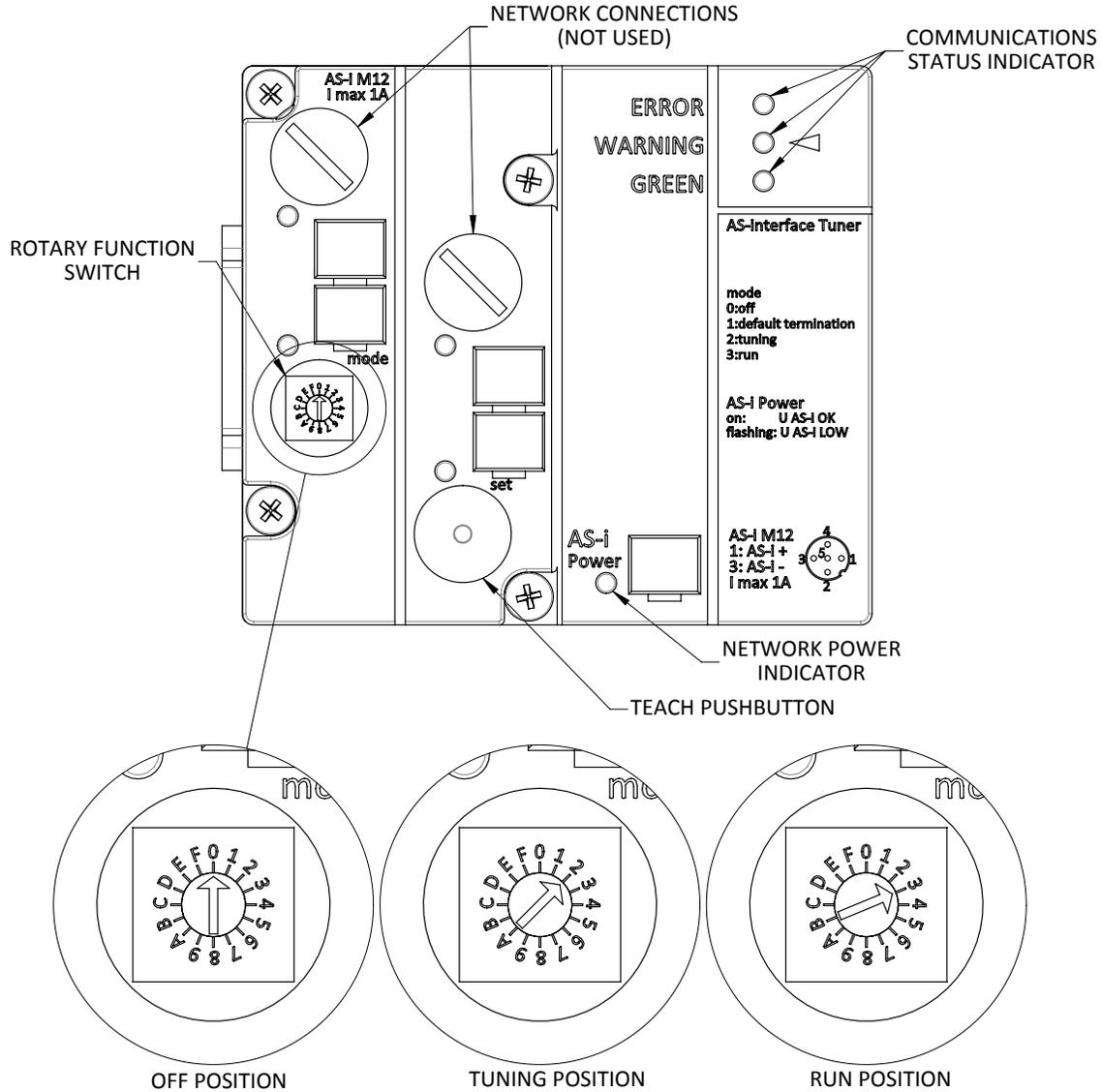
Note: If the conveyor system Stop circuit is connected to the Control Panel, caution should be taken that the ChainKeeper system not be relied upon to prevent the conveyor system from starting during system configuration as it is possible for the Stop circuit to be bypassed by the ChainKeeper system.

Installation

Initializing AS-i Tuner

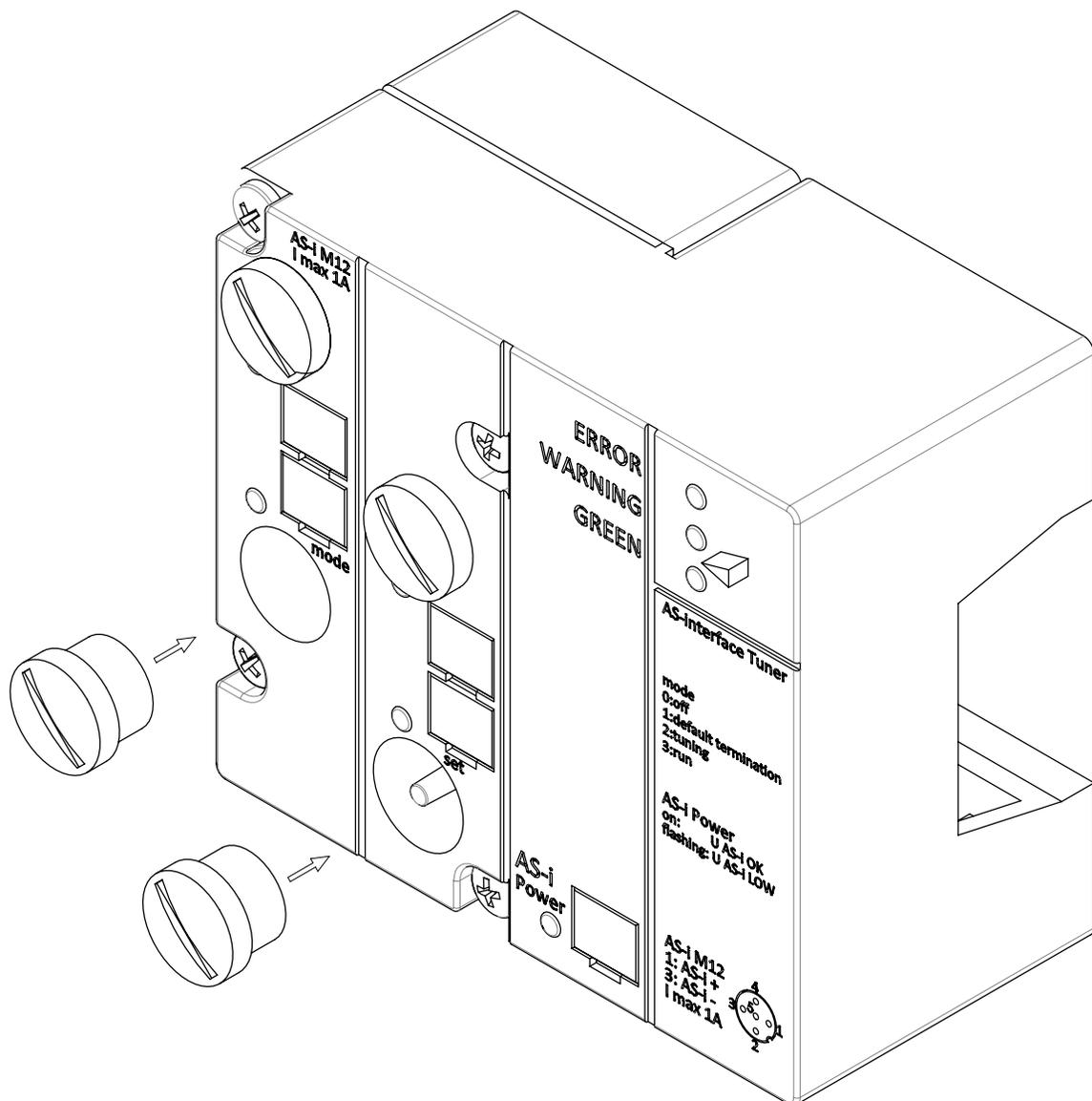


1. Remove threaded caps covering Rotary Function Switch and Teach Pushbutton.



2. Rotate Rotary Function Switch to “Tuning” Position Number 2.
3. Press and Hold the Teach Pushbutton until Red-Yellow-Green Communication Status Indicator LED’s begin blinking in a rotating sequence.
4. When rotating sequence has stopped, one Communication Status Indicator LED will light solid to indicate network quality.
5. Rotate Rotary Function Switch to “Run” Position Number 3.

Installation



6. Install threaded caps to cover and protect Rotary Function Switch and Teach Pushbutton.

Note: Communication Status Indicator color definitions are shown below:

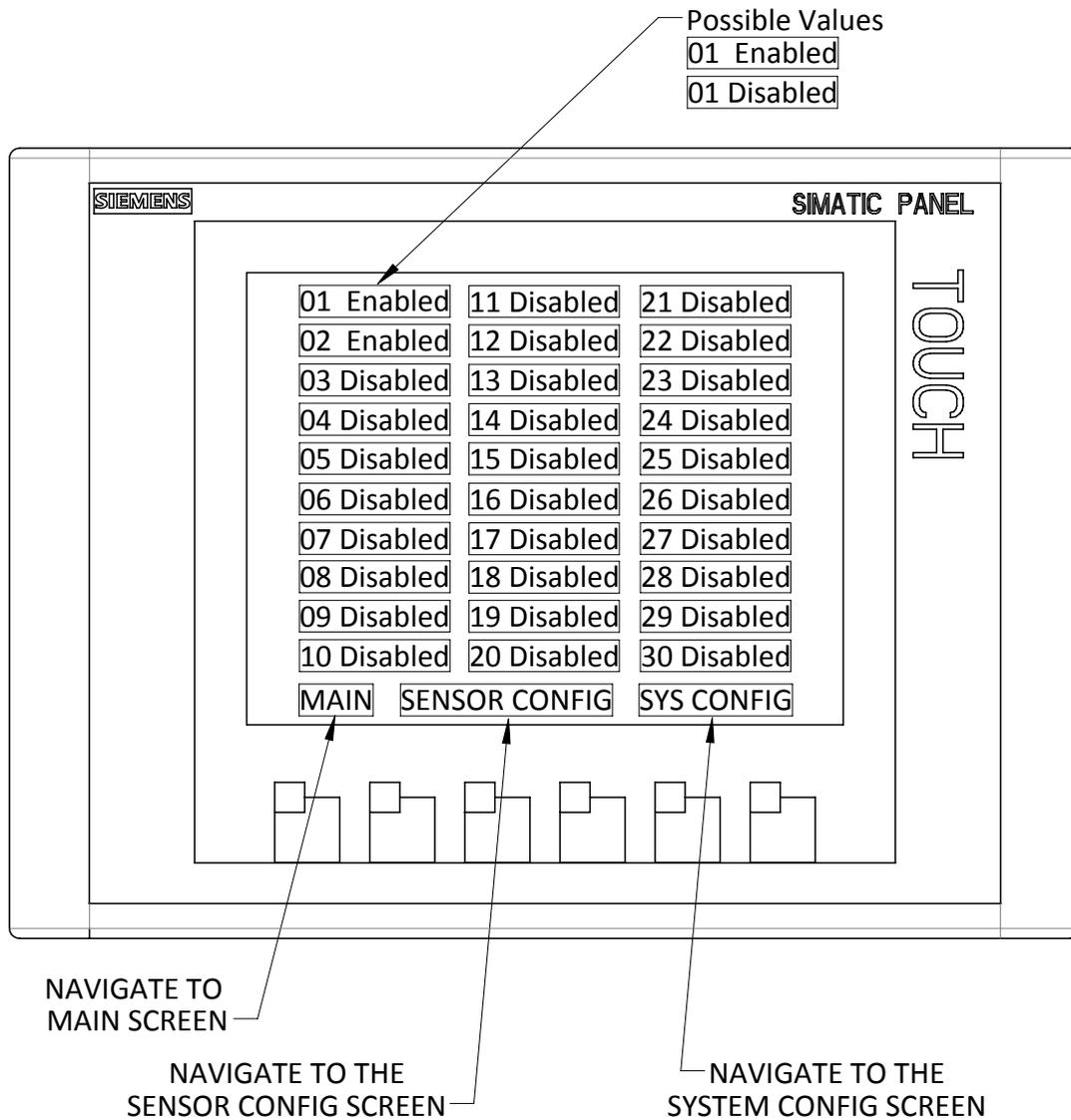
Green -> Good Network Quality

Yellow -> Fair Network Quality

Red -> Poor Network Quality

Note: If network quality is Poor the system should be verified for isolation from high voltage lines, also it must be ensured that AS-i cable does not have coiled or damaged sections.

Configure the Sensors



1. Navigate to the Sensor Configuration screen.
2. Enable each Sensor address number that is in use on the conveyor system.

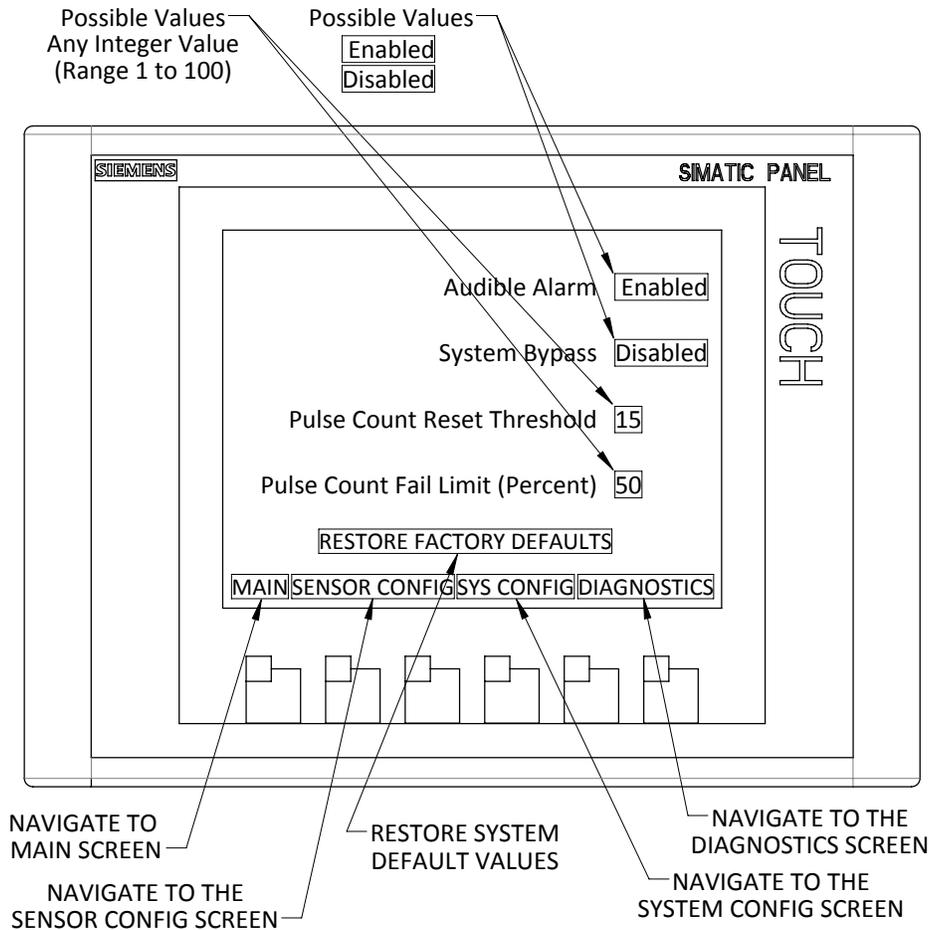
Note: Each Sensor can be in one of two configuration states, ENABLED or DISABLED. Each time the Sensor number is pressed, the state of the Sensor will toggle between these two states.

Note: The ChainKeeper system will generate false alarms if any Sensor address number not in use on the system is ENABLED. Be certain to only enable Sensors that are installed on the system.

Note: There must be at least two Sensors installed and ENABLED for the ChainKeeper system to operate. If no Sensors are ENABLED, or if only one Sensor is ENABLED, the ChainKeeper system will be unable to detect a fault condition.

Installation

Configure the General System Settings



1. Navigate to the System Configuration screen
2. If an audible alert is desired, verify that the Audible Alarm is ENABLED. If an audible alert is not desired, toggle the Audible Alarm to DISABLED.
3. Verify that the System Bypass is DISABLED.

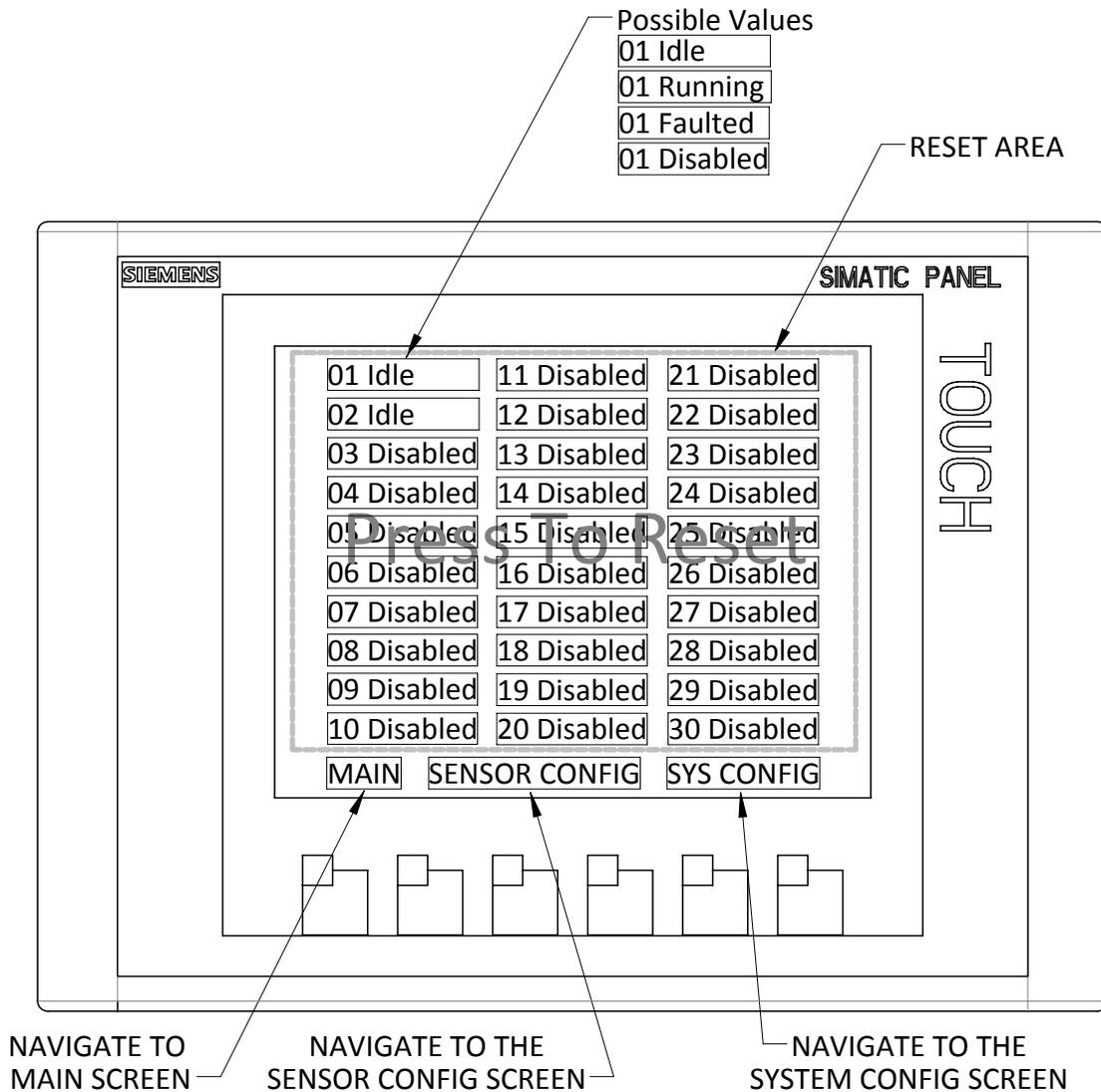
Note: If the System Bypass is ENABLED, the ChainKeeper system will not activate the fault relay and will not stop the conveyor system.

Note: If the System Bypass is ENABLED, an AMBER indicator light will appear.

4. Verify that the Pulse Count Reset Threshold is at 15 and the Pulse Count Fail Limit percent is at 50.

Note: The Pulse Count Reset Threshold and the Pulse Count Fail Limit percent should be left at their factory default values of 15 and 50, respectively. These values should only be altered if instructed by the factory to allow for a unique job condition that requires these to be changed.

Review the Configuration Settings



1. Navigate to the Main screen.
2. Verify that any faults are cleared by touching the screen anywhere within the RESET AREA.

Note: Active faults will be demonstrated by the RED indicator light and audible alarm and the status of FAULTED in one or more Sensor locations.

3. Review the Main screen and verify that all installed Sensors are reporting IDLE and verify that all Sensors not in use are reporting DISABLED.

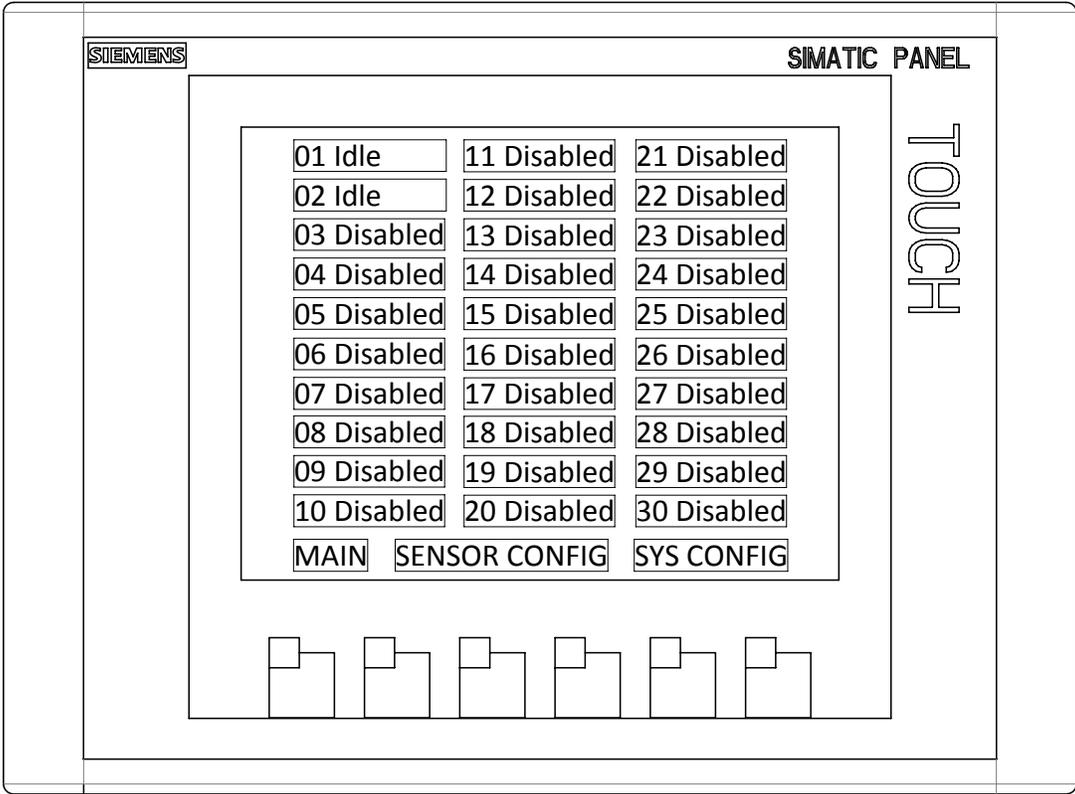
Note: The Main screen displays the status of all 30 Sensor locations, regardless whether the Sensor is used or not. Sensor address numbers that are not in use should display DISABLED.

Installation

Section 2 Operating Instructions

Overview

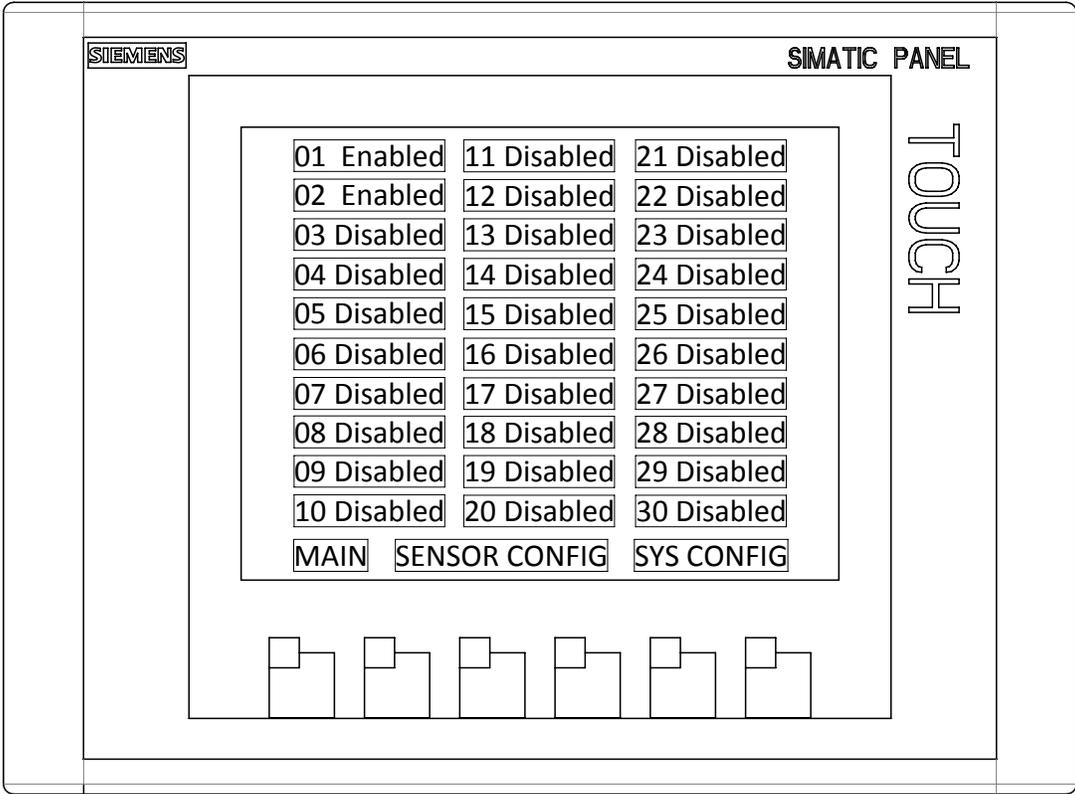
Main Screen



Provides system status for each of the possible 30 Sensor positions. Used to evaluate the operating health of the system and identify the source of any detected faults.

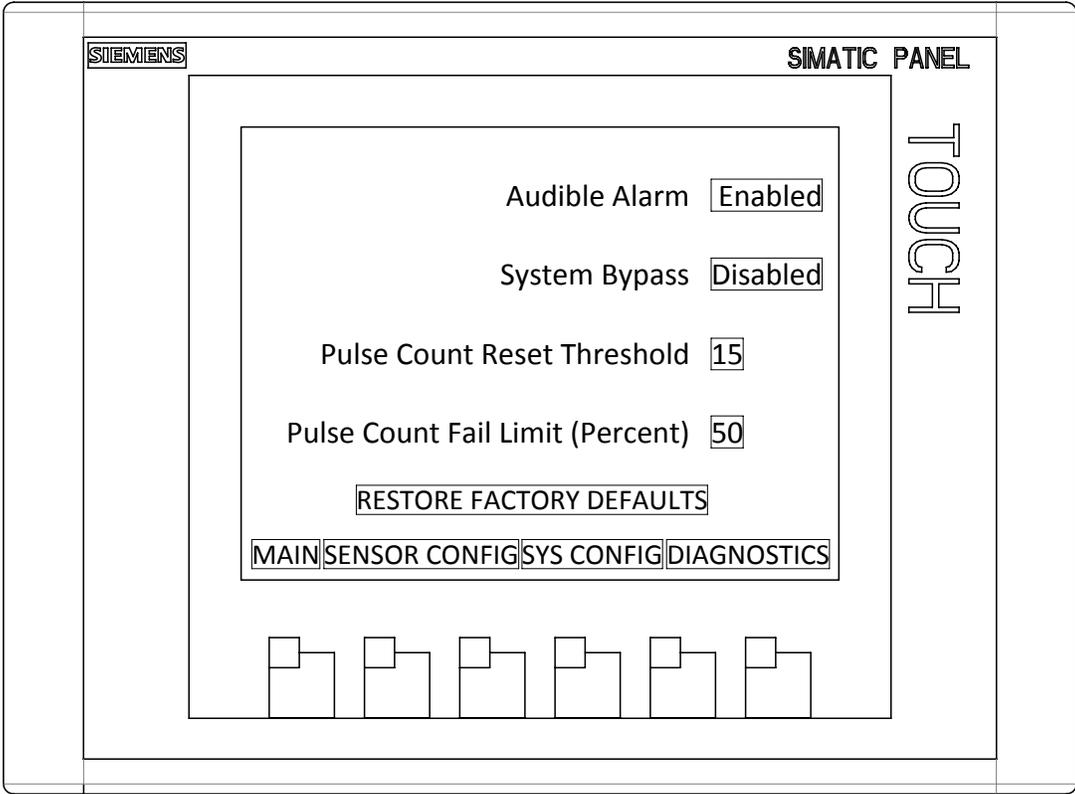
Operating Instructions

Sensor Configuration Screen



Used to configure each of the possible 30 Sensor address numbers for use in the system.

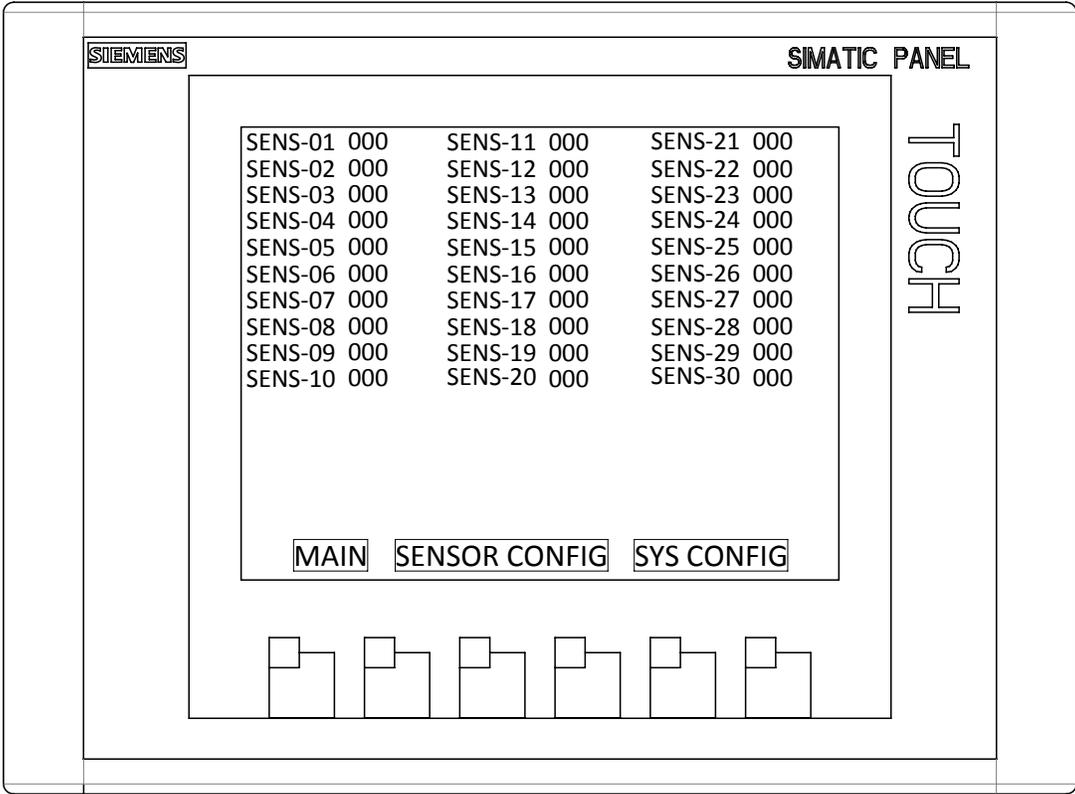
System Configuration Screen



General system configuration settings.

Operating Instructions

Diagnostics Screen



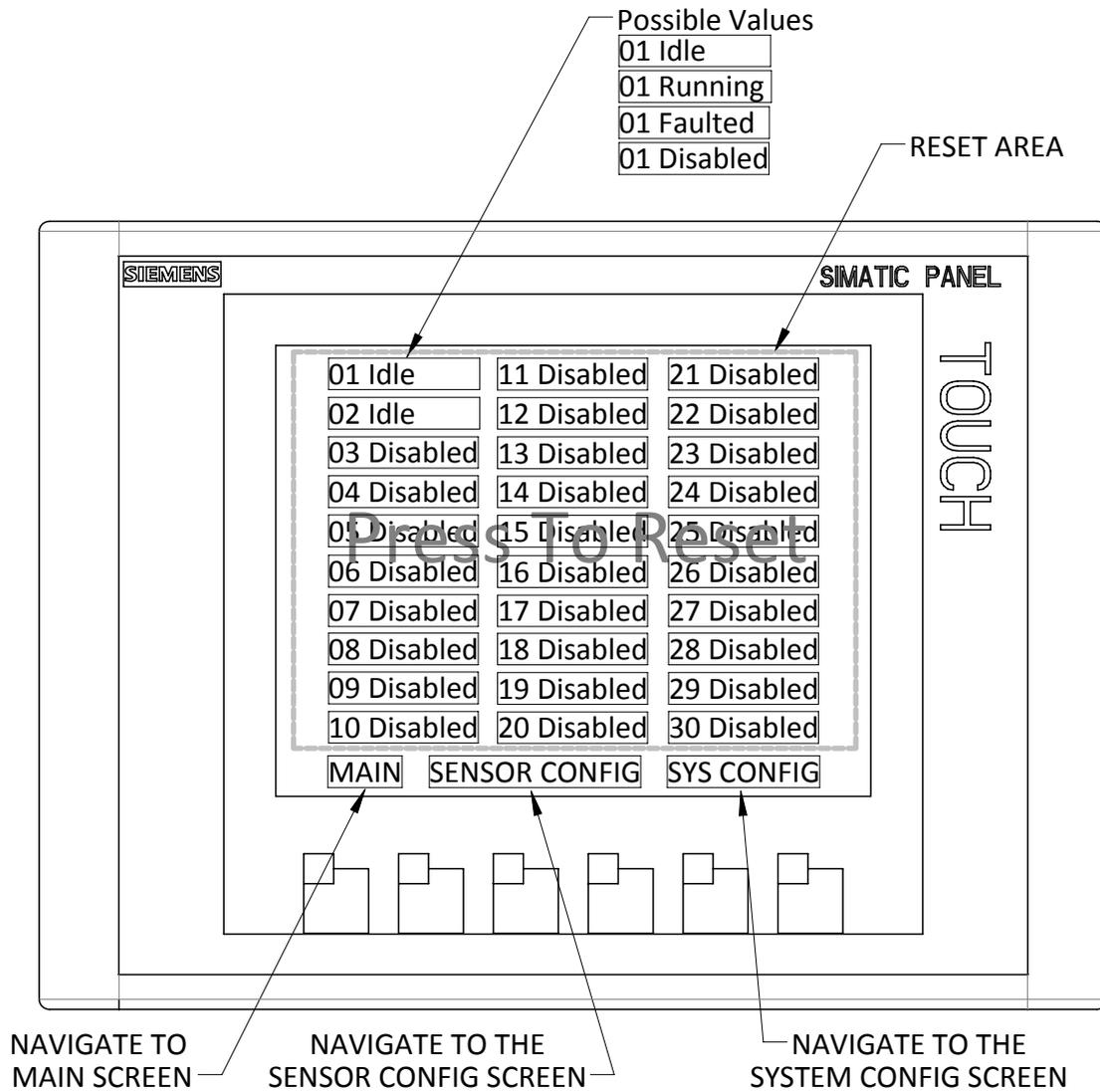
System diagnostics information used for advanced troubleshooting.

Operation

Note: Operation of the system should only be performed after all installation steps have been completed and all configuration steps have been completed. Refer to “Section 1 : Installation” for more information.

Operating Instructions

Using the Main Screen



Sensor Status Indicator

Idle

The Sensor address position is in use, but no movement of the conveyor system is detected by the Sensor.

Running

The Sensor address position is in use and is actively detecting movement in the conveyor system.

Faulted

The Sensor address position is in use and has produced an unexpected value that has resulted in a Sensor fault for this location. All Sensor faults will generate a system fault which will activate the system fault relay, light the RED status indicator and sound the audible alarm.

Note: The audible alarm and the fault relay can be disabled. Refer to the “Configure the General System Settings” section and “Understanding the System Configuration Screen” section of the manual for information on bypassing the fault relay and the audible alarm.

Disabled

The Sensor address position is not used in the evaluation of a fault. If a physical Sensor exists in the system at this address number, it will be ignored. Sensors are enabled and disabled from the Sensor Configuration screen.

Operating Instructions

System Fault Reset

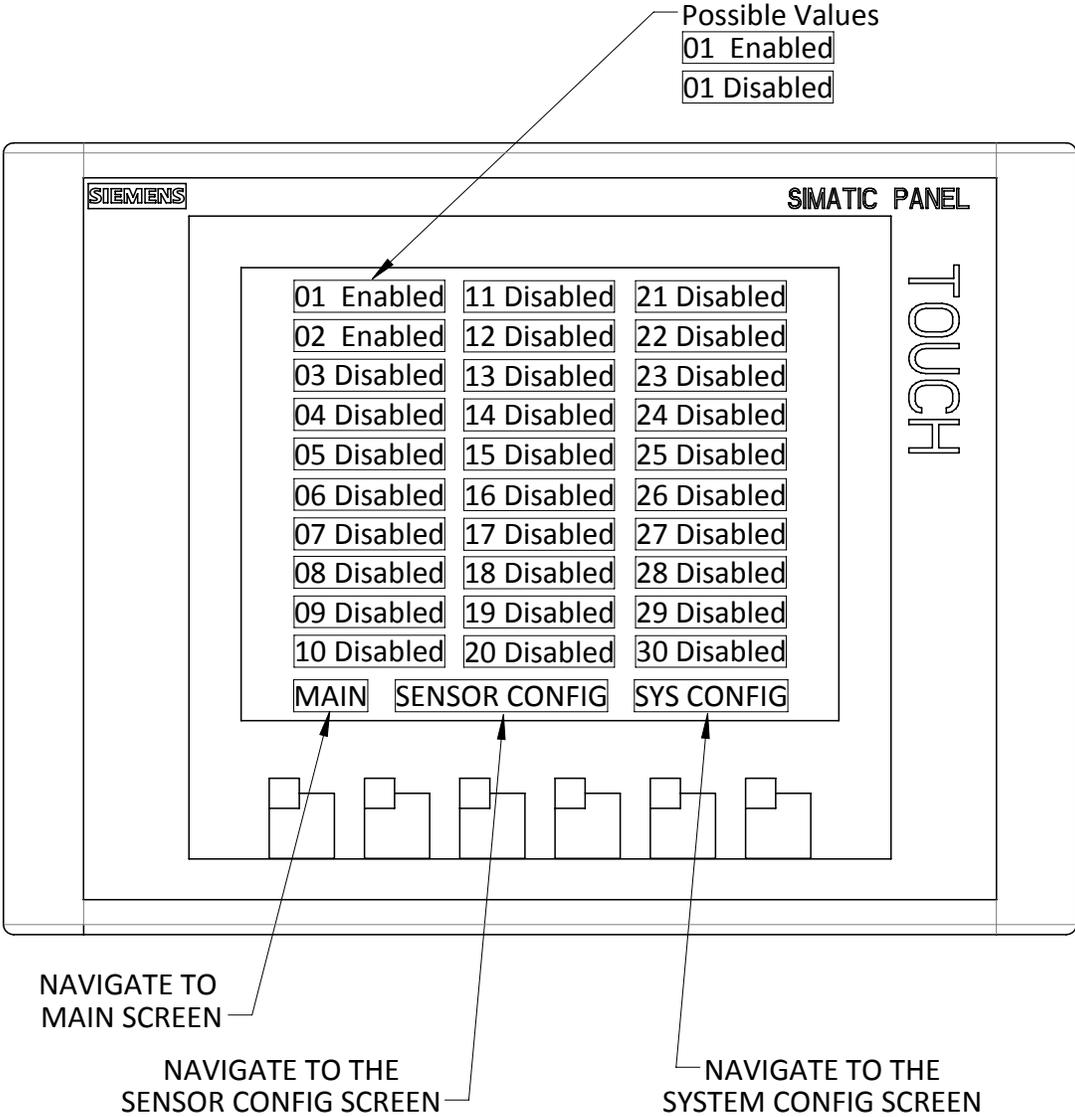
System faults occur when any Sensor address number that is ENABLED receives an unexpected signal from the corresponding numbered Sensor device mounted on the conveyor system. Upon entering a FAULTED state, the Sensor address will cause a system fault to occur which will signal the RED indicator light, activate the fault relay, sound the audible alarm, and “Press To Reset” will flash on the MAIN screen.

Note: The audible alarm and the fault relay can be disabled. Refer to the “Configure the General System Settings” section of the manual for information on bypassing the fault relay and the audible alarm.

If a system fault is active, the conveyor system cannot be started; all faults must be reset before the conveyor system will be allowed to start. To reset a system fault, simply press the user interface anywhere within the FAULT RESET area of the screen.

Note: The fault relay may be bypassed which will prevent the system from stopping the conveyor system upon generating a fault. Refer to the “Configure the General System Settings” section of the manual for information on bypassing the fault relay.

Using the Sensor Configuration Screen



Operating Instructions

Sensor Configuration

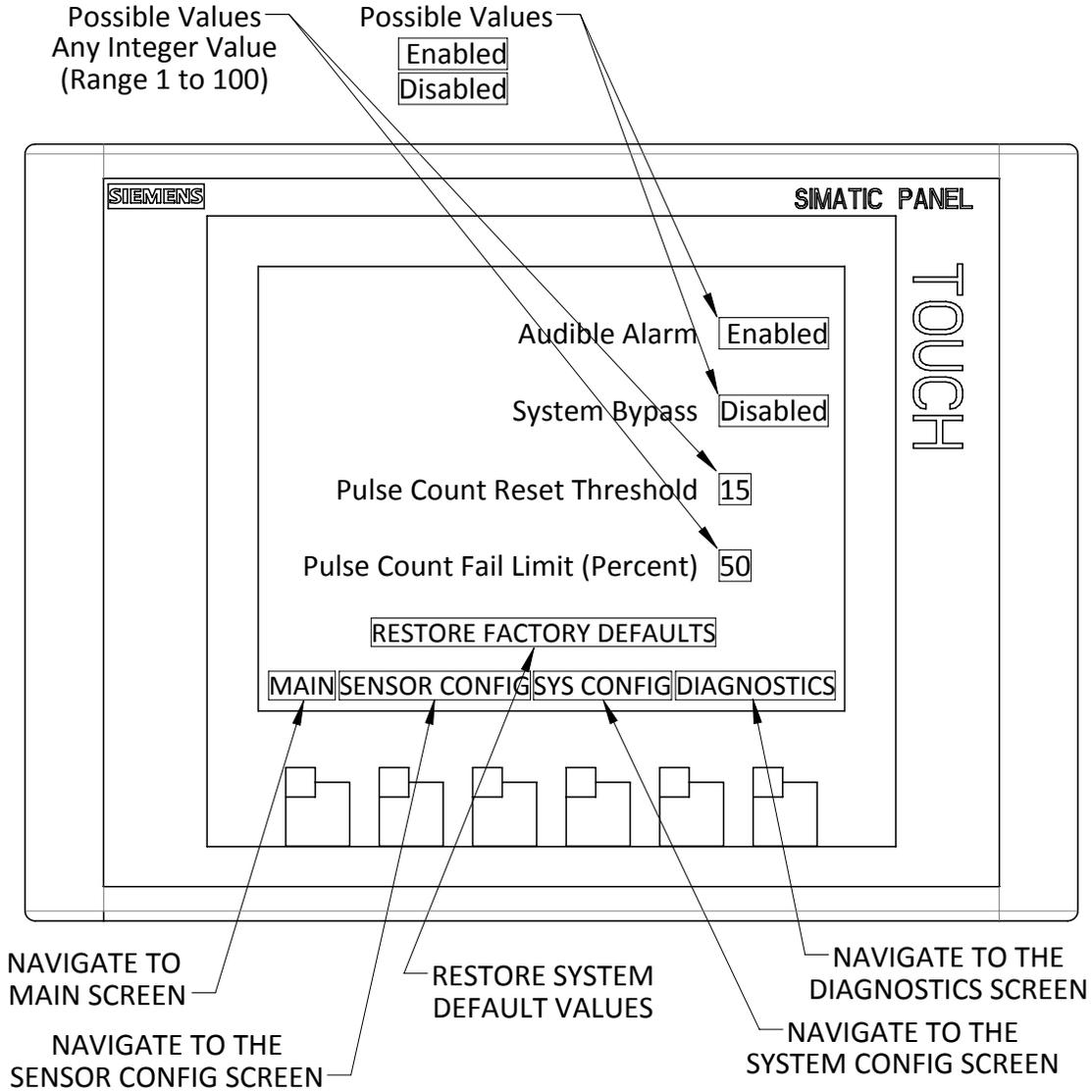
Enabled

The Sensor address position is used in the evaluation of a fault. The corresponding physical Sensor mounted on the conveyor system will be monitored and its information evaluated by the system to determine if the conveyor is operating properly at this location. If the physical Sensor mounted on the conveyor system at this location is not producing expected results, a Sensor fault will occur at this address number and a system fault will be generated.

Disabled

The Sensor address position is not used in the evaluation of a fault. If a physical Sensor exists in the system at this address number, it will be ignored.

Using the System Configuration screen



Operating Instructions

System Configuration

Audible Alarm

If ENABLED, a system fault will be indicated by an audible siren located at the Control Panel on the stack lights indicator.

If DISABLED, the audible siren will be muted when a system fault occurs.

System Bypass

If DISABLED, a system fault will activate the Control Panel's alarm relay and allow the ChainKeeper system to stop the conveyor system.

If ENABLED, as system fault will not activate the Control Panel's alarm relay. The ChainKeeper system will not have any effect on the operation of the conveyor system.

Note: The ChainKeeper system is only able to stop the conveyor system if the conveyor system Stop circuit has been wired through the Control Panel. Refer to the section "Electrical Installation Instructions" for more information.

Pulse Count Reset Threshold

This parameter defines the number of input pulses that the Sensors must receive when averaged as a group, before the Sensors are individually evaluated for a fault condition.

Note: This value should not be changed from its default factory value unless directed to do so by the factory.

Pulse Count Fail Limit Percent

This parameter defines the permitted error in each individual Sensor pulse count readings before a Sensor is determined to be at fault. Each individual Sensor target count value is a percentage of the Pulse Count Reset Threshold.

Note: This value should not be changed from its default factory value unless directed to do so by the factory.

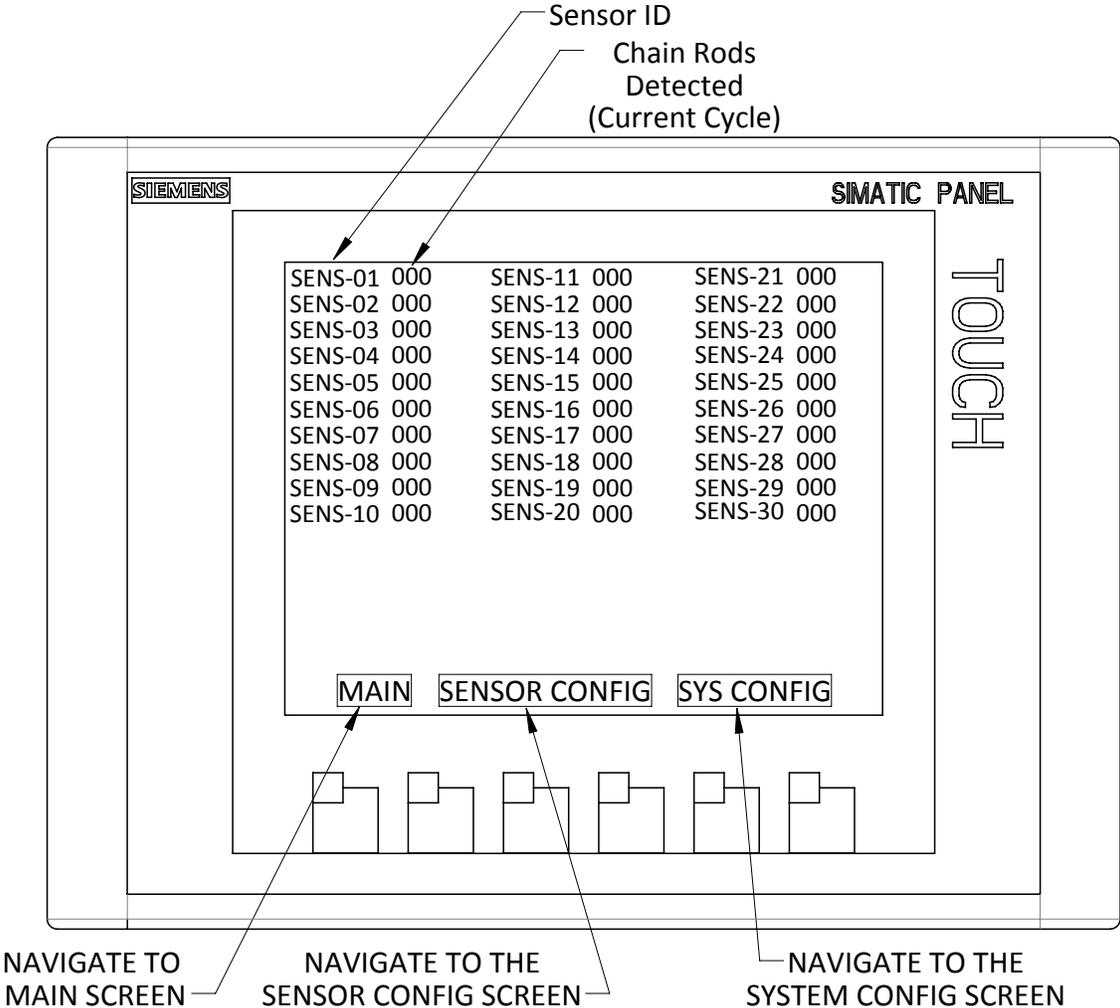
Restore Factory Defaults

Pressing this will disable all sensors and reset all system configuration settings to factory defaults.

Diagnostics

Navigates to the advanced Diagnostics screen.

Using the Diagnostics screen



Operating Instructions

Diagnostics

SENS-XX YYY

Indicates the sensor address and the number of rods detected by the sensor during this count cycle. This information can be used to troubleshoot false alarms or failed alarms. Please consult the factory for more information on using this screen for troubleshooting false alarms and/or failed alarms.

Note: Cycle Count size is configured on the System Configuration screen. It may be beneficial to temporarily alter the Cycle Count size to the max allowable value of 99 when performing troubleshooting using the advanced Diagnostics screen.

System Stack Light Diagnosis

Light Color	Diagnosis
Red	<p>Indicates a fault is active. The status of one or more Sensor locations will show FAULTED and the system fault relay will activate and the audible alarm will sound.</p> <p>Note: The audible alarm can be disabled. Refer to the “Configure the General System Settings” section of the manual for information on bypassing the audible alarm.</p>
Green	<p>Indicates the system is running. The status of all enabled Sensor locations will show RUNNING and the system fault relay will be inactive.</p>
Amber	<p>Indicates the system is in bypass mode. The system fault relay and audible alarm will not activate if a fault is active.</p> <p>Note: Refer to the “Configure the General System Settings” section of the manual for information on bypassing the audible alarm and system fault relay.</p>
No Light	<p>Indicates the system is Idle. The status of all enabled Sensor locations will show IDLE.</p>

Operating Instructions

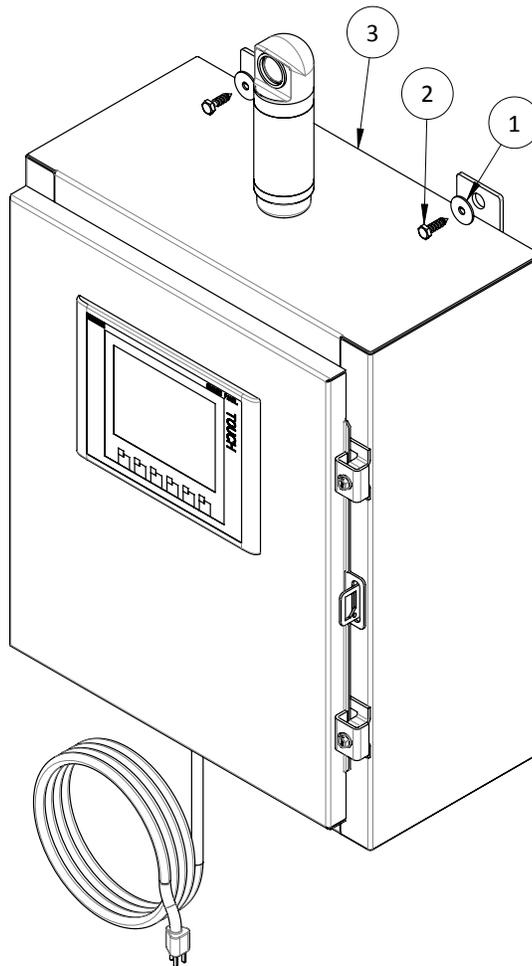
Section 3 System Components

Component Details

System Components

Control Panel Kit

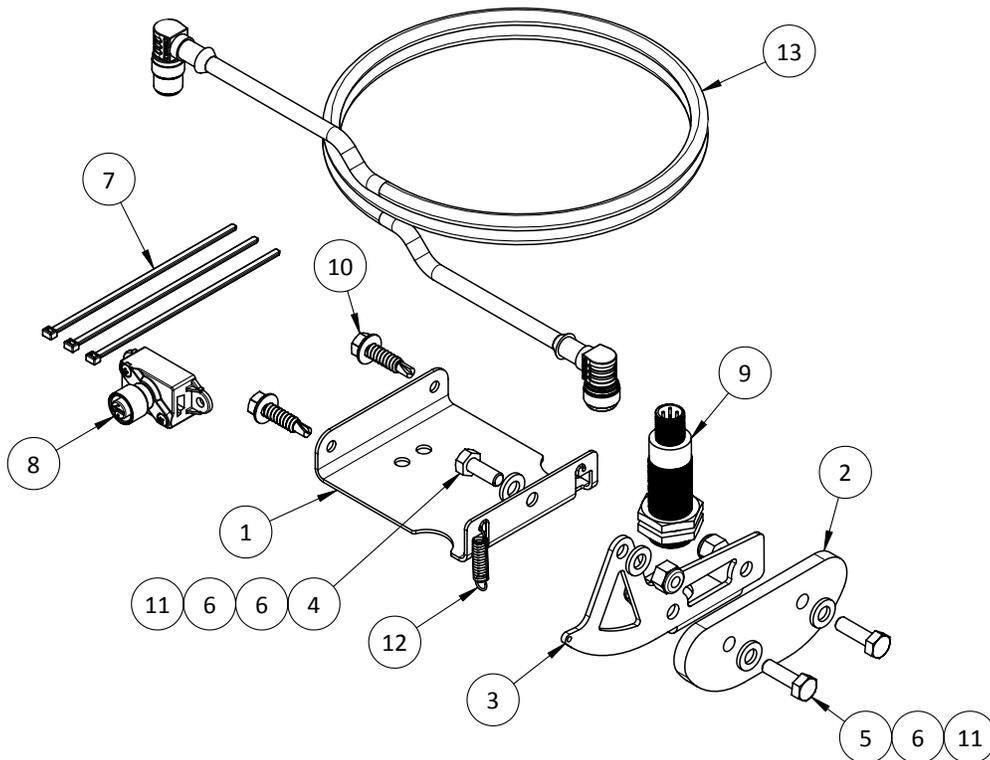
ITEM NO.	DRAWING NO.	PART NO.	DESCRIPTION	QTY.
1		F9-90-19-0	Fender Washer 1/4"	4
2		F9-102-19-0-16	1/4" x 1" Lag Screw	4
3		LGCCN-02	Control Panel	1



Control Panel Kit		
Part Number	Conveyor Type	Voltage
A100A	All Types	120V
A100B		240V

Sensor Kit

ITEM NO.	DRAWING NO.	PART NO.	DESCRIPTION	QTY.
1	12J A 100 01B		Sensor Mount Bracket	1
2	12J A 100 02B		Sensor Guard	1
3	12J A 100 03A		Swing Arm	1
4		21 56 068	M6 x 16 Hex Bolt, Zinc	1
5		21 56 069	M6 x 20 Hex Bolt, Zinc	2
6		26 02 109	M6 Flat Washer, Zinc	4
7		7130K52	1/8" x 4-3/16" Cable Tie, UV Black	3
8		ASI-PM-1-BW1239	AS-i Flat Cable Adapter	1
9		BI5U-M18-ASIX-H1140	Prox, M18, AS-i Bus, 5mm Sense	1
10		F8-66-19-0-16	1/4" x 1" Hex Head Self-Tapping Screw, Stainless	2
11		F9-29-46-2-0	M6 Nylock Nut, Zinc	3
12		LE 031 C 0M	Extension Spring	1
13		WK4.4T-1-WS4.4T	"Turck" Cord Set	1

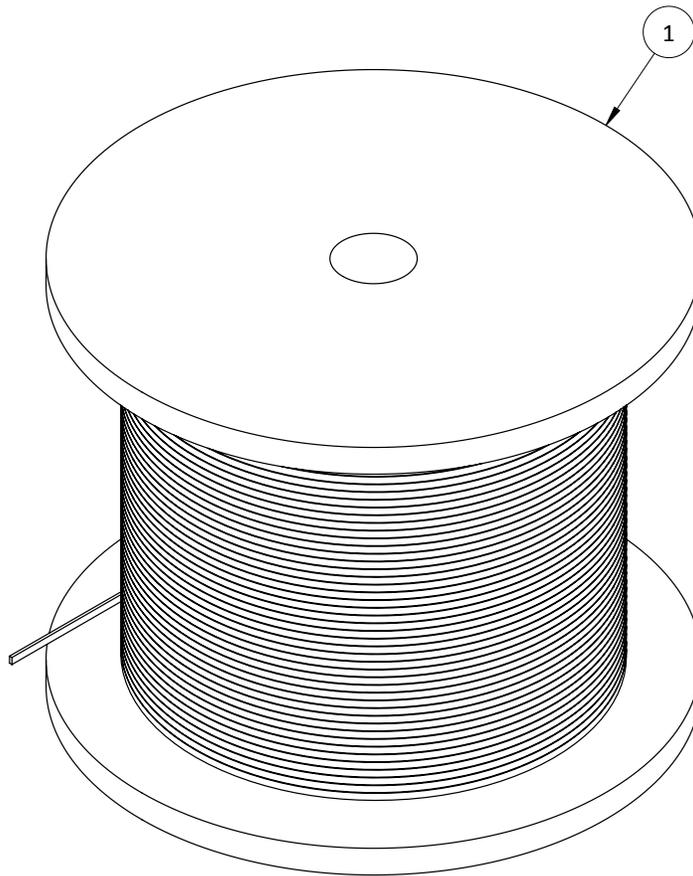


Sensor Kit	
Part Number	Conveyor Type
A101B	All Types

System Components

AS-i Cable

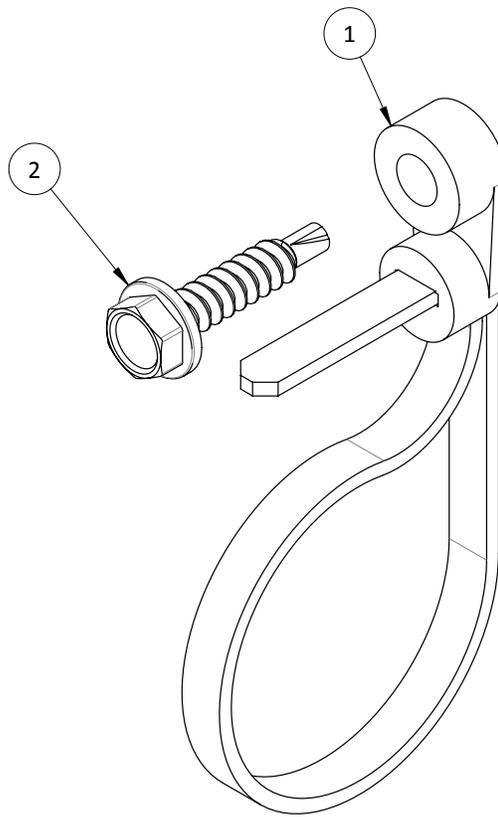
ITEM NO.	DRAWING NO.	PART NO.	DESCRIPTION	QTY.
1		3RX9012-0AA00	AS-I Cable, EPDM, Yellow, 1000 Meters	1



AS-i Cable, ft	
Part Number	Conveyor Type
A104A	All Types

Cable Mounting Kit

ITEM NO.	DRAWING NO.	PART NO.	DESCRIPTION	QTY.
1		TY535MX	Cable Tie with Mounting Hole, 7-3/16"	1
2		F9-66-7-0-12	#8-18 x 3/4" Hex Head Self-Drilling Screw, Zinc	1

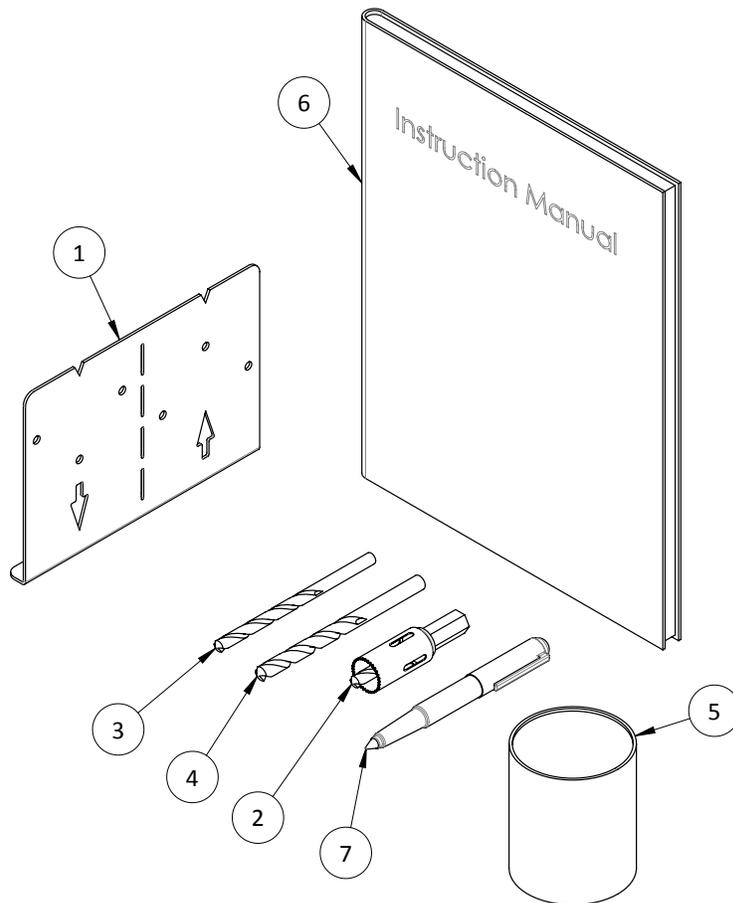


Cable Mounting Kit	
Part Number	Conveyor Type
A103B	All Types

System Components

Installation Kit

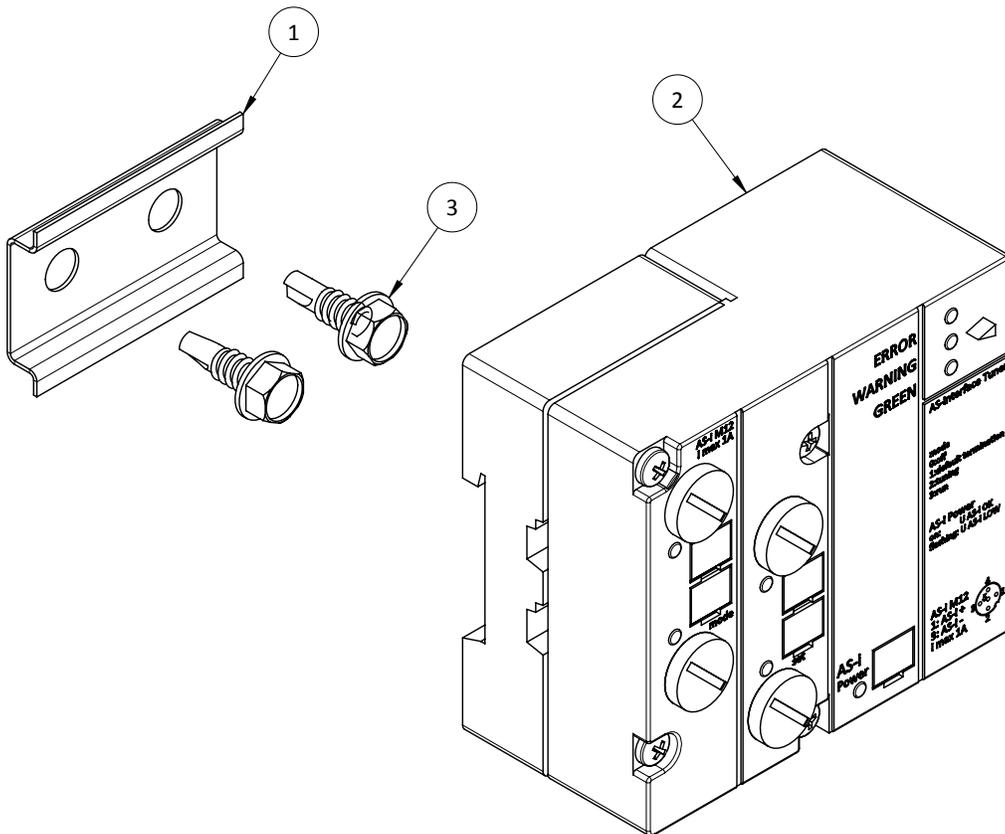
ITEM NO.	DRAWING NO.	PART NO.	DESCRIPTION	QTY.
1	12J A 500 01A		Mounting Hole Template	1
2		4008A141	3/4" Hole Saw	1
3		4066A89	1/4" Pilot Drill Bit	1
4		8870A32	5/16" Drill Bit	1
5		9560T8	Tool Dip, Black	1
6		IM-709-00	Instruction Manual	1
7		S-12699BL	Fine Tip Marker	1



Installation Kit	
Part Number	Conveyor Type
A105A	All Types

Tuner Kit

ITEM NO.	DRAWING NO.	PART NO.	DESCRIPTION	QTY.
1	12J A 200 01A		Din Rail, 2-in	1
2		ASI-TUNER-BW1648	ASi - Tuner	1
3		F9-66-19-0-12	1/4" x 3/4" Sheet Metal Screw, Zinc	2



Tuner Kit	
Part Number	Conveyor Type
A102A	All Types

System Components

Section 4 General Information

Lubing Contact Information

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General Information Requests
Customer Service/Order Assistance
Technical Support Requests

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