

Industrial Safety Products Catalog



Safety Mats
Trim Extrusions
Controls
Accessories

Larco Industrial Safety Mat Systems

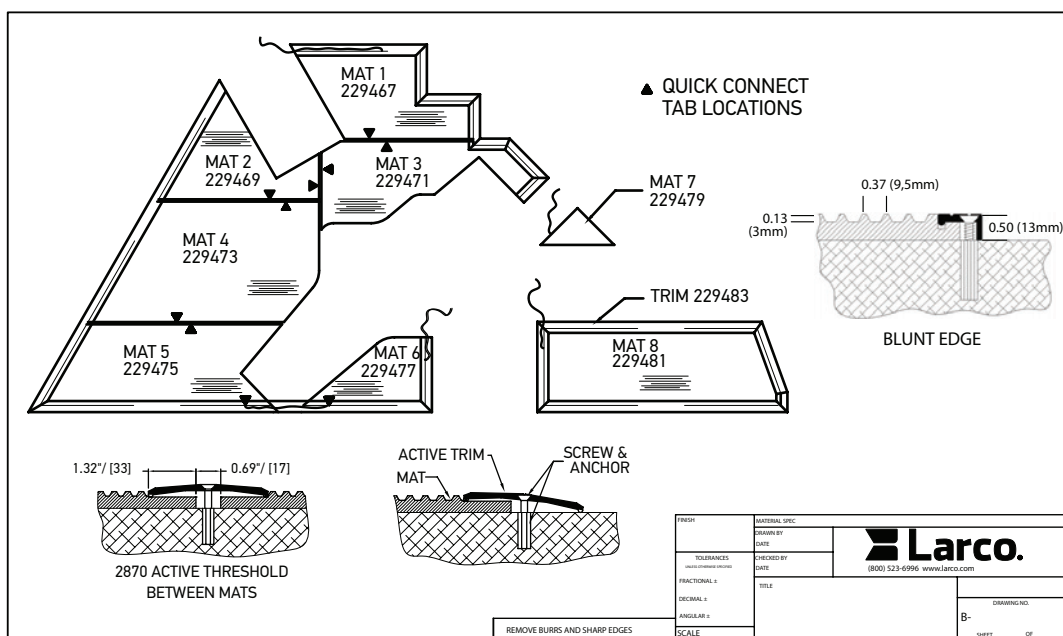
Since 1957, Larco has focused its efforts on developing and producing the most reliable and durable presence-sensing mats available. Designed to meet stringent industrial requirements, Larco safety mat systems offer a durable solution to safe guarding needs, resisting severe environmental conditions with control reliable system performance.

How Larco Industrial Safety Mat Systems Work

A Larco presence-sensing safety mat works like a normally-open switch. When stepped on, the switch closes and sends a signal to the Larco safety controller to change state, using its normally open or closed safety rated relay contacts, thereby signaling the controls on the guarded equipment to stop.

Larco mat trims and extrusions provide a reliable solution for installing and securing safety mats.

Larco controls provide intelligence to the system by monitoring the safety mat and machine wires for malfunctions due to incorrect wiring or physical damage.



Safety Mat Layout Drawing Example

Larco can provide CAD drawings of the proposed layout, if required.

Applications

Larco Industrial Safety Mat Systems have been used to successfully reduce hazards in a number of industries in machine point-of-operation and area/perimeter guarding applications, including:

- Robotic Welding
- Laser Welding/Cutting
- Water Jet Machines
- Pick and Place Robots
- Plastic Molding Machines
- Assembly Machines
- Automated Material Handling
- Packaging Machinery
- Textile Machinery
- Conveyers
- Paper Converting Machinery
- CNC Punches & Tube Benders
- Wash Stations
- Punch Presses
- In-Section Molding Machine
- Automatic Palletizers
- Fabrication Cells

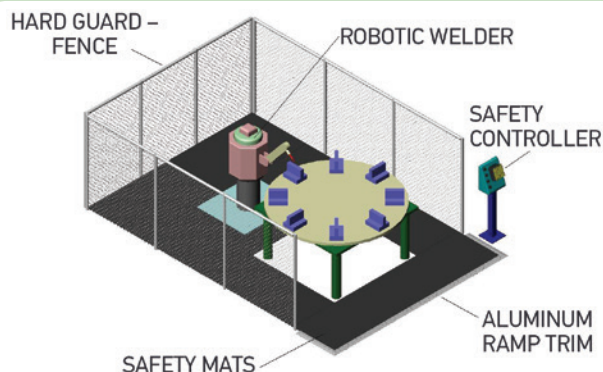
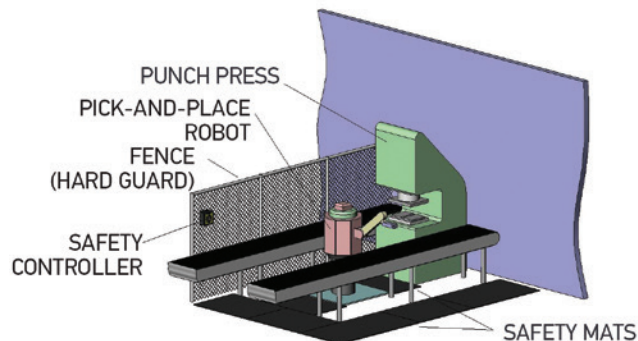
Industries Served

- Tire Manufacturing
- Paper and Cardboard Manufacturing
- Automotive
- Wood Products Manufacturing
- Aircraft Industry
- Boat Manufacturing
- Tractor Manufacturing
- Personal Watercraft and ATV Industry

Applications

Punch Press

The punch press is being fed by an industrial robot and the main safe guarding of the installation is provided by the safety mat. Hard guarding is also provided in the back of the cell to prevent unintentional entry. Due to its open design the cell can be guarded by mats alone. The pinch point is well within the machine cell with the only access being through contact with the safety mats.

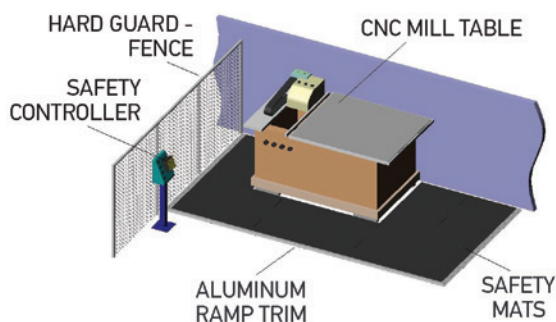
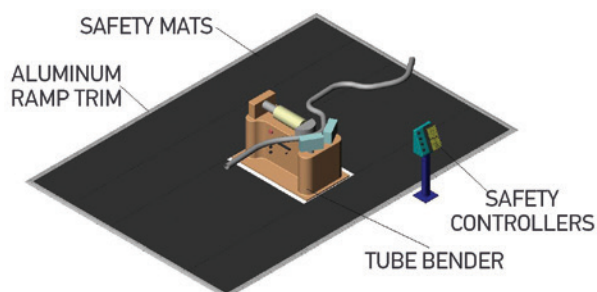


Robotic Welding

The safety mats work in conjunction with the hard guarding to provide complete protection for maintenance or service people. Upon entering the cell, the robot and rotary table are disabled. Once the mats are clear of obstruction, the operator must push a reset button located at the safety controller to reset the safety system and permit the machine to run. The safety controller and reset button are located such that the operator has a full view of the work area.

Tube Bender

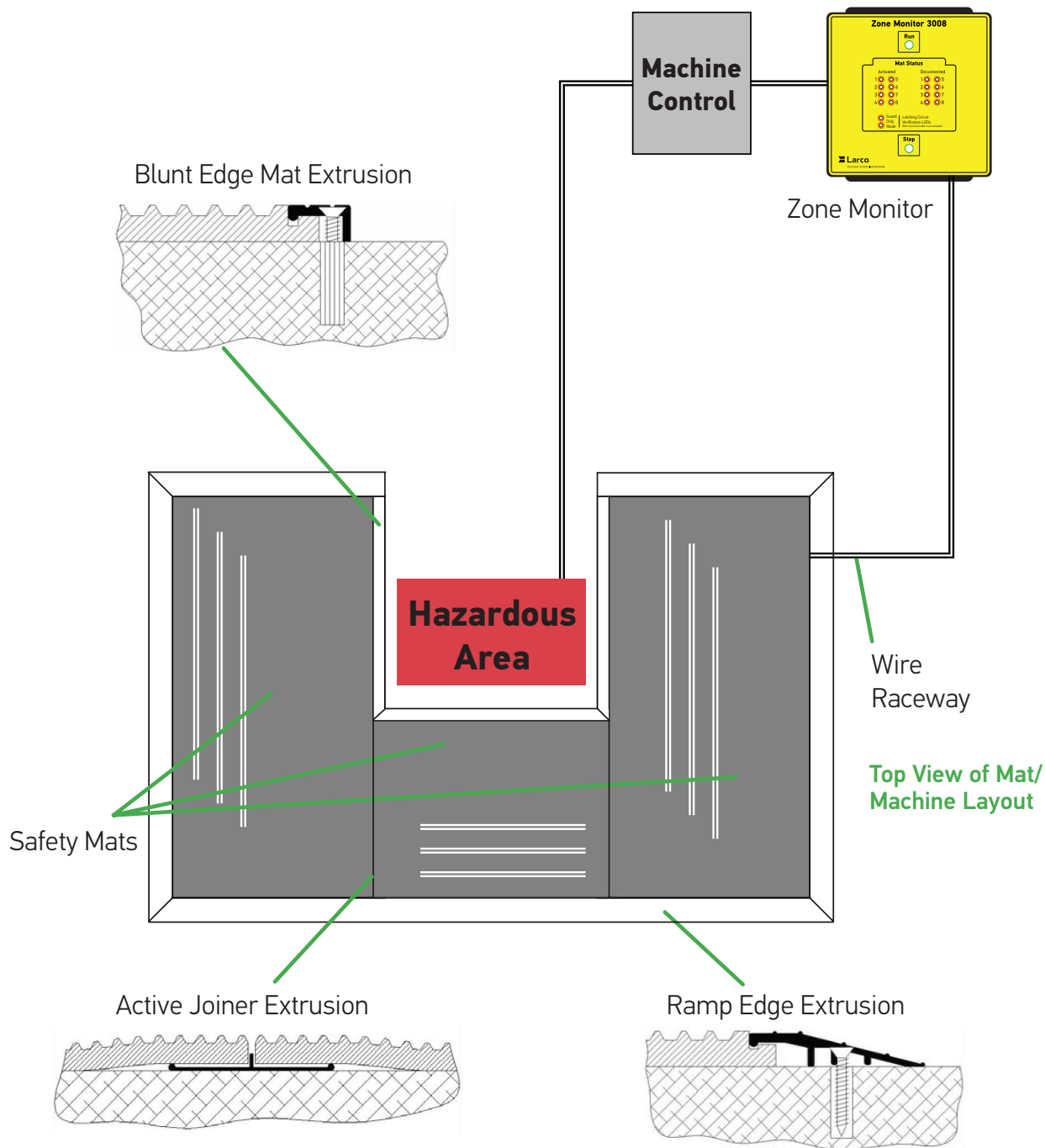
The safety hazard associated with a tube bender is the movement of the part during machine operation. The safety mats in this example are larger to accommodate the arc of movement associated with the part. Any person coming within the proximity of the machine stops the bending process.



CNC Machine

Safety mats are used on certain machines where the machine table can move to either side of the CNC machine. Since the table moves at a rapid rate, the possibility of an accident happening is greatly increased if the operator is standing too close. Safety mats and hard guarding are placed around the perimeter of the machine to insure a safe proximity from the working table.

Typical Safety Mat Layout



WARNING! Usage of safety mats and safety mat devices is governed by each user's local codes and applicable industry standards. Improper usage of these devices could result in severe injuries. Applications must be limited to machines that can be stopped consistently and immediately at any point during the hazardous portion of the cycle or stroke. In the event that Larco Safety Mats do not prevent all access to the hazardous operation, the unprotected access must be guarded by other appropriate safeguarding devices or barriers.

For more information on Larco Industrial Safety Products and Accessories, visit www.larco.com to download installation manuals, product specification sheets and technical bulletins.

Frequently Asked Questions

Why do I need mat trim?

Answer: The trim provides the user with four functions. One, according to industrial safety standards, a mat that is used cannot be easily moved out of position. When the trim is properly installed it will hold the mat or mats in place. Ramp trim is used where pedestrian traffic is present.

Two, according to the safety standards the mat cannot create a tripping hazard.

Three, the trim provides a place to run the mat cords which protect the cords from damage and helps in the ease of installation.

Four, the trim prevents debris from building up under the mat which over time may flex the mat enough to cause a false activation.

Can I drive a forklift onto a Larco safety mat?

Answer: The Larco mat is designed to withstand load capacities of 3000 PSI. The only thing suggested is that if forklift traffic will occur on the mats, use a 2-1/2" ramp extrusion (PN: 211926) which has a stronger design over the 2" ramp trim extrusion (PN: 219033).

I require a mat that is 48" wide and 12 feet long, but the longest Larco mat that is manufactured is only six feet long. What can I do?

Answer: Place any number of Larco mats side-by-side to obtain whatever length desired. The only thing required is to remove the lock lip edge from each mat where any two mats are joined together. Then a piece of Active Joiner extrusion (PN: 230010) must be placed under the seam. This guarantees a 100% active seam where the two mats are joined.

Can I order a Larco mat in colors other than black?

Answer: Larco mats are available in a number of color options. The standard mat colors are black and yellow, but other colors are available for an additional charge, including brown, gray, blue, red and other custom colors.

What if I need a special size that isn't listed on the Larco standard size list?

Answer: Larco can modify standard mat sizes at time of manufacturing to create an unlimited number of "custom" mat sizes and shapes. Specify changes in length, width, notches, angles and radiuses to any of our standard mat sizes. If larger lengths are needed, two or more mats can be joined together with active joiner and perimeter trim.

How much voltage can I apply to the mat?

Answer: The mats are classified as a low-voltage device. Power requirements are 30 volts and below, AC or DC.

Where can safety mats be used?

Answer:

- Point of operation guarding
- Area guarding
- Perimeter guarding



Forklift on Larco mat.

Larco mats are impact resistant, waterproof and can also withstand frequent forklift traffic.

Safety Mat

Impact Resilient

Heavy-duty electrode assembly and durable outer shell provide excellent impact resilience and the ability to withstand heavy loads of up to 3,000 PSI.

Highly Sensitive

Larco mats have a high sensitivity threshold requiring only 5-10 lbs. for activation in normal foot traffic.

Totally Submersible

Larco safety mats are not laminated and will not separate. Hermetically sealed in a thick, seamless, molded vinyl shell, they are impervious to fluids and suitable for even the wettest industrial environments.



Larco's heavy-duty steel electrode assembly is bonded to the mat's durable outer shell ensuring superior protection against fluid infiltration even if the mats outer vinyl surface is cut or damaged.

4-Year Mat Warranty

All Larco mats are made in the USA

Mat Specifications

Electrode Assembly

- Normally open switch
- High-durability 24-gauge steel
- Standard 18-gauge, 4-wire, single-jacketed lead wires and optional application-specific wiring options
- Hermetically encapsulated switch and lead wires
- Designed to meet IP67 and NEMA
- Watertight and totally submersible

Outer Shell

- Proprietary molded vinyl
- Shore A hardness 72 ± 2
- Dielectric strength – 300 volts/mil.
- Ribbed to prevent slipping, aggressive non-skid SureStep surface available
- Variety of colors
- Monogram, logos and lettering capabilities

Load Capacity

- 3,000 psi

Temperature Range

- -35°F to 120°F (-37°C to 49°C)

Activation Sensitivity

- 5-10 lbs. in normal foot traffic

Chemical Resistance

Good resistance to

- Mineral Acids
- Organic Acids
- Alcohols
- Aldehydes
- Caustics
- Petroleum Solvents & Oils

Not recommended for

- Organic Solvents
- Chlorinated Solvents

For a complete chemical resistance chart, contact ATEK directly.

Applicable Standards

Designed to meet or exceed ANSI B11.19 Machine Tool Standard, OSHA 1910.212 General Machine Guarding, ANSI/RIA 15.06 Industrial Robots and Robots System-Safety Requirements and EN 1760-1 Safety of Machinery, Pressure Sensitive Protective Devices.

STANDARD SIZES AVAILABLE

12 x 12	30 x 30
12 x 24	30 x 36
12 x 36	30 x 42
12 x 48	30 x 48
12 x 60	30 x 60
12 x 72	30 x 72
18 x 24	33-1/2 x 32
18 x 36	33-1/2 x 44
18 x 48	33-1/2 x 56
18 x 60	34-7/8 x 31-3/16
18 x 72	34-7/8 x 43-3/16
24 x 20	34-7/8 x 55-3/16
24 x 24	36 x 36
24 x 30	36 x 42
24 x 36	36 x 48
24 x 42	36 x 60
24 x 48	36 x 72
24 x 56	39-1/2 x 44
24 x 60	39-1/2 x 56
27-1/2 x 27-1/2	40-7/8 x 31-3/16
24 x 72	40-7/8 x 43-3/16
27-1/2 x 32-1/2	40-7/8 x 55-3/16
27-1/2 x 43	48 x 48
27-1/2 x 44	48 x 60
27-1/2 x 56	48 x 72
27-1/2 x 57	

Safety Mat Options

Customization Capabilities

Color

Larco safety mats are available in a number of color options. The standard Larco mat colors are black and yellow. Other colors are available upon request.

Custom Lettering and Logos

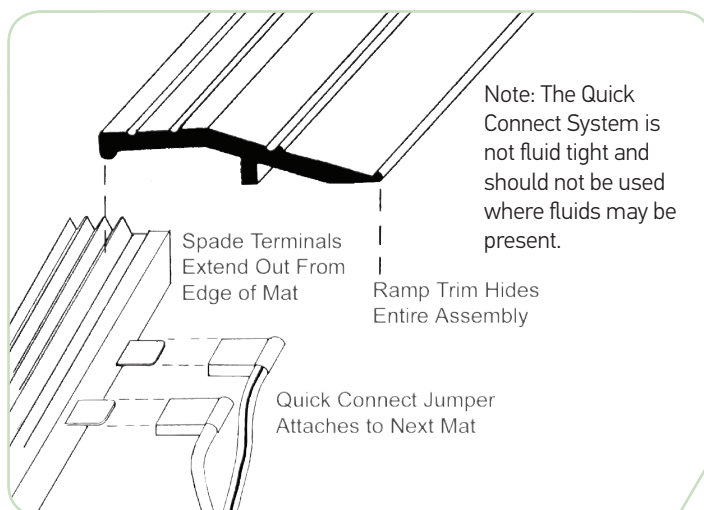
Informational messages such as "Caution" or "Do Not Step" or symbols can be added to safety mats utilizing contrasting colors to provide a visual warning or message to personnel. Larco has a variety of symbols in stock and can custom-build logos for any specific application.

Custom Sizes and Shapes

Larco offers over 50 standard size mats. Custom sizes, notches, angles, and shapes are available providing unlimited options for your application needs.

Quick Connect Tab/Cord System

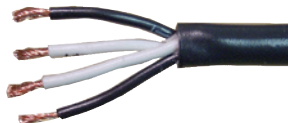
Through a series of spade terminals and jumpers, the Quick Connect System provides on the floor connections, without junction boxes. This option is ideal for multiple mat applications in which multiple wires and wiring around obstructions are issues, including areas with heavy pedestrian and forklift traffic.



Mat Wiring

Mat Wiring Cord (standard)

All Larco mats are configured with a 20' long, single-jacketed, four-wire cord unless otherwise specified at the time of purchase.



Four-Wire Plug Cord (optional)

Larco offers the convenience of a molded plug for easy wire connections. When used with the control box plug connector, a watertight mechanical connection and seal is formed.



Field Installed Connector (optional)

PN: 226724

This connector easily mounts on the mat control box and provides a watertight connection for installing Larco standard mat cords.



Control Box Plug Connector (optional)

PN: 226931

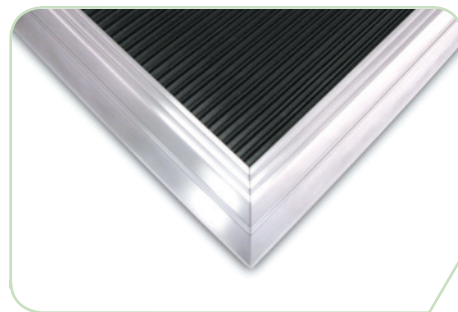
The plug connector quickly connects a Larco mat plug cord to the mat control box using a threaded, watertight connection.



Standard Ribbed Mat

Typical Industrial Application

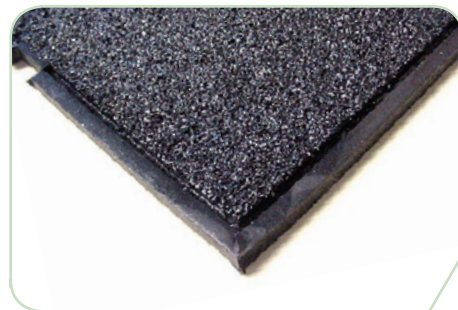
Course rib design provides slip resistance and helps reduce debris build up on the surface of the mat. It offers unparalleled durability and versatility for machine safe guarding needs. The ribbed surface is impact resilient, abrasion resistant and provides a standard slip resistant mat surface.



SureStep® Mat

Added Slip Protection for Unique Environments

In industrial environments where liquids, oil and grease make floors hazardous, Larco's SureStep mats, with their aggressive non-skid surface, can provide added protection over Larco's standard ribbed mats. Tested under the toughest industrial conditions, Larco's non-skid surface, combined with a totally submersible design, provides high reliability while reducing the risk of slipping on surfaces covered with grease and oil. The mats are treated with a high-traction, long-wearing granular surface material that is bonded to the mat's vinyl surface with an adhesive that is designed to withstand oils, water and other fluids. The mats are constructed to withstand pedestrian and vehicular traffic.



Comfort Step Mat

Anti-Fatigue Presence-Sensing Safety Mats for Machine Guarding

The Comfort Step mat is an anti-fatigue presence sensing safety mat available for machine guarding. The Comfort Step mat is designed to reduce worker fatigue in machinery safeguarding applications where frequent worker presence is required, such as load/unload stations.

Features/Benefits

- Made to the same high manufacturing specifications as Larco's standard ribbed presence-sensing safety mat, the Comfort Step mat is designed for the foot traffic in demanding industrial environments.
- The Comfort Step provides the safety features of Larco's standard mat with the added comfort of an anti-fatigue mat.
- Designed to reduce lower body aches and pain and overall worker fatigue, which increases productivity and employee morale.



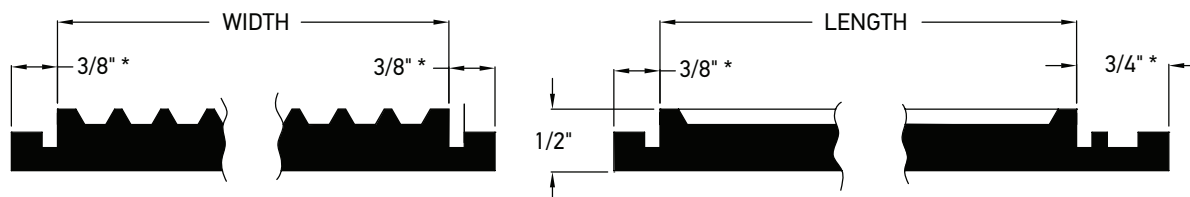
Note: Comfort Step Mats are not to be used with forklift traffic (consult ATEK regarding correct applications).

Mat Edge Styles and Mat Measuring

Lock Lip Edge

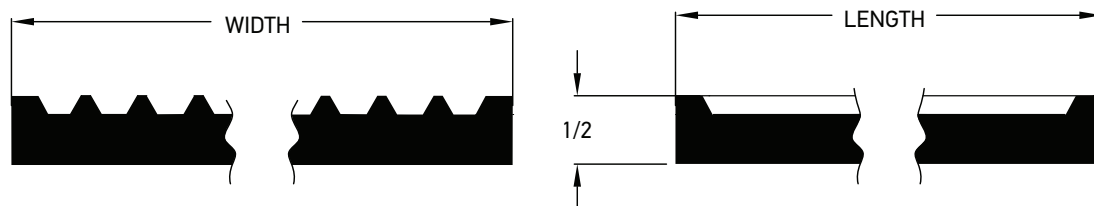
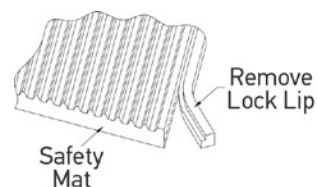
The most common and widely used edge style for Larco mats, the Lock Lip Edge is used in single mat applications or is removed to create the square edge for use with the “Active Joiner” extrusion.

* Dimensions do not include the Lock Lip edge.



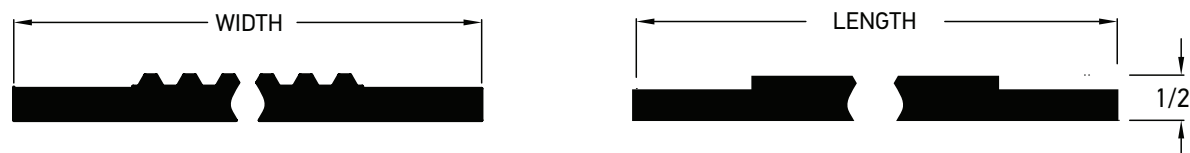
Square Edge

Most commonly used when the “Active Joiner” extrusion is used to join mats, the square edge is created by cutting away the Lock Lip Edge (shown right) at the time of installation. This edge is also used when a mat is “butted” up against an obstruction or against a machine base.



Active Edge

This edge accommodates the “Active Threshold” and “Active Ramp” extrusions.



Trim Extrusions

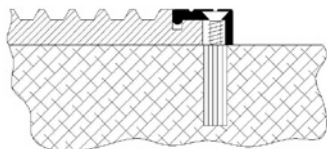
Trim extrusions are used to secure mats to a surface so they cannot be easily moved out of position. Trim can be fastened with mounting screws and anchors or by using Larco's Labor Saver Tape (VHB).

Larco can fabricate complete trim kits for your specific industrial safety mat layout.

Lock Lip Edge Extrusions

Blunt Edge/Recessed Trim

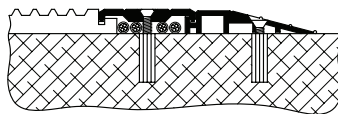
This mounting method is used to secure Lock Lip mats when mounting in a recessed area or machinery pan or where ramp trim is unnecessary, such as a non traffic area.



PN: 210978 (1057)

Ramped Lead-Up & Wire Raceway

The Ramped Lead-up is used in conjunction with the Wire Raceway to route wires along the edge of mats.

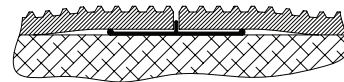


PN: 212069 (200) & 211488 (1250)

Square Edge Extrusions

Active Joiner

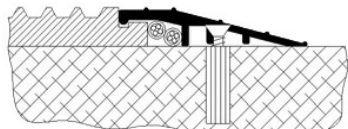
The Active Joiner is used to eliminate inactive areas between mats.



PN: 230010 (2824)

Lock Lip Ramp Trims

The 2 - 1/2" ramp provides more strength and a longer ramp for use in areas with heavy vehicular traffic.



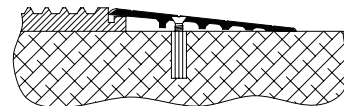
PN: 211926 (1814)

The 2" ramp works well in pedestrian traffic to eliminate trip hazards.



PN: 219033 (3311)

The 4" ramp trim is best used in pedestrian traffic areas where longer ramps with less slope are desired.

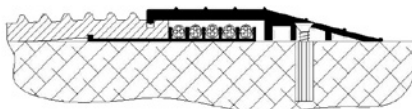


PN: 211234 (1100)

Wire Management



The 4" ramp trim with cord routing tray provides an easy way to manage up to 5 standard mat cords.

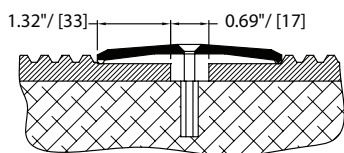


4" Heavy Duty Ramp Trim
with Cord Routing

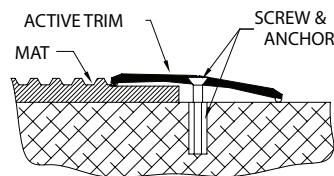
PN: 235166 (5063) & 235167 (5064)

Trim Extrusions

Active Threshold/Active Ramp Between Mats



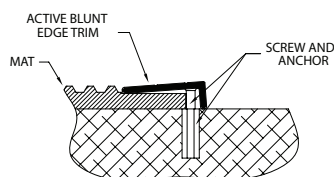
Active Threshold



Active Ramp

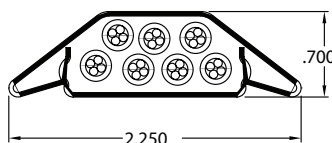
PN: 214980 (2870)

Active Blunt Edge Extrusion



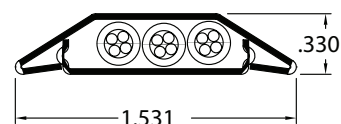
Wire Raceways

Used to route mat wires across the floor to the connection point. Available in two sizes, which can hold either three or seven standard mat cords.



18 Gauge Steel

PN: 225710 (2600)



21 Gauge Steel

PN: 211525 (1500)

Labor Saver Self-Adhesive Mat System

Save Time & Money with Quick & Easy Mounting

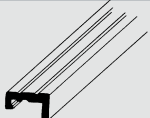
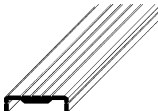
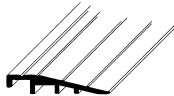
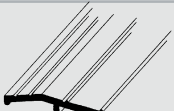
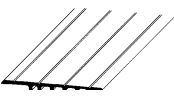
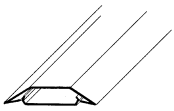
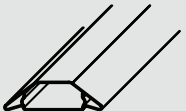
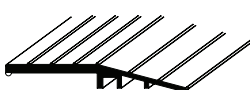
In mounting situations where drilling of trim is just not practical, the Larco Labor Saver Self-Adhesive Mat System can be used to secure a mat or trim in place.

In this mounting method, a specially formulated adhesive tape is applied to either the trim surface or directly onto the mat to hold the mat in place without screws or other metal fasteners. No drilling is required.

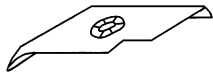
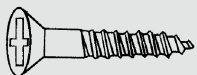
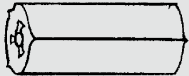
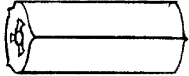
Primarily used in applications where mats are placed in recessed areas or on platform walkways, Larco Labor Saver Self-Adhesive Tape can be used in any number of internal and external industrial applications, requiring only a smooth mounting surface that is free of grease and dirt. This mounting method performs well in tough industrial environments, including areas with heavy forklift and pedestrian traffic. Larco Labor Saver Self-Adhesive tape has excellent long-term holding power, and is ideal for bonding to a variety of floor types, including most metal, sealed wood, glass, plastics and painted surfaces.

For more information on this mounting method and its application, contact ATEK directly.

Trim Extrusions

TRIM		PART NUMBER	STOCK LENGTH
	Active Joiner (2824)	230010	120"
	Blunt Edge/Recessed Trim (1057)	210978	125"
	Joining Strip (200) Used with PN: 211488	212069	120"
	Ramped Lead-up (1250) Used with PN: 212069	211488	120"
	2 1/2" Ramp Trim (1814)	211926	132"
	2" Ramp Trim (3311)	219033	130"
	4" Ramp Trim – Low Profile (1100)	211234	143"
	Active Threshold (2870)	214980	120"
	3-Cord Wire Raceway (1500)	211525	120"
	7-Cord Wire Raceway (2600)	225710	120"
	4" Ramp Trim – Heavy Duty (5063) Used with PN: 235167	235166	120"
	Cord Routing Extrusion (5064) Used with PN: 235166	235167	120"

Installation Accessories

ACCESSORY		PART NUMBER	DESCRIPTION/USE
	Corner Cap	226255	Eliminates the need for mitering when forming trim kits using PN: 214980
	Active Threshold Screw	214920	Solid stainless steel #12 x 1 1/2" screw for use with PN: 214980 trim
	Trim Screw	210745	Solid stainless steel #10 x 1 1/4" screw for use with all extrusions except PN: 214980
	Screw Anchor	210750	1" anchor for PN: 214920 screw (blue)
	Screw Anchor	210746	1" anchor for PN: 210745 screw (green)
	Jumper Wire/Quick Connect	214988 216484	8" length 18" length
	Caution or Hazard Tape	222109	Black and yellow pattern (2" wide, 108' roll)

Pressure-Sensitive Edge Guards

Pressure-Sensitive Edge Guards provide a safety solution for a wide variety of narrow edge applications. All Larco Edge Guards are made with durable materials and are built to length in sizes from 6" to 100'.

SPECIFICATIONS	EGS110	EGS120
Color	Black	
Length	6" to 100'	
Sensitivity	8 psi	4 psi - approximately
Lead Wire	2', 22 ga. – standard	2', 18 ga. – standard
Wire Outlet Location	Standard: end lead Custom: right hand, left hand	
Wiring	4 wire, Normally open	
Electrical Requirements	24 VAC/VDC, 1/2 Amp	
Mounting Channel	High density PVC	Aluminum
Sensing Edge	Flexible PVC	
Temperature Range	-30°F to +155°F	



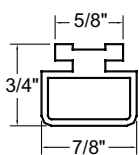
EGS110



EGS120

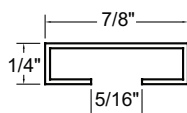
Channel Design - Cross Section Views

PVC



(End View)

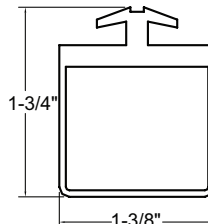
EGS110-C



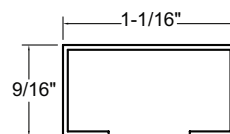
(Mounting Channel)

EGS110-C2

Aluminum



(End View)



(Mounting Channel)

EGS120-C

Junction Boxes - CE Rated

Made of durable polycarbonate, the junction boxes are designed to connect Larco presence-sensing Industrial Safety Mats in a watertight environment. The boxes, which include integral cable grips that will accept up to 5 or 10 mat cables, eliminate awkward and malfunction-prone on-the-floor mat connections. The box cover includes a Neoprene gasket to ensure a watertight cover seal, guaranteeing the Larco Safety mat system will perform in even the harshest industrial environments. (Use with the MAX Series Controllers.)



2-5 Mat Junction Box

PN: CE22771100



2-10 Mat Junction Box

PN: CE22771110

Protection Class: NEMA Types: 1,2,3,3R,4,4X,5,12 and 13. IP65, Din 40050

Safety Mat Control Units

Choosing the right Larco safety mat controller is an important decision, balancing features and options required while maintaining a high level of productivity. Larco's high-quality, high-performance safety controls can accommodate most industrial safety demands. Use the information below to identify which safety controller will work best.



FACTORS TO CONSIDER	MAX-SERIES CONTROLLERS	ZONE MONITOR 3000	ZONE MONITOR 3008
Number of mats	1 mat diagnostic input. (Monitor from 1 - 10 safety mats when used in conjunction w/terminal strip or junction box)	4 mat diagnostic inputs.	8 mat diagnostic inputs.
Mode of operation	Automatic restart or guard only		
Input voltages available	110 VAC, 24 VDC or 230 VAC, 24 VDC	110/230 VAC, 24 VDC	
Field replaceable relay pack	No	Yes	
Safety output relays	4 NO (closed when run) 1 NC (open when run)	2 NO (closed when run) 1 NC (open when run)	
Environmental rating	Enclosure IP 20 (must be installed in NEMA 3/IP 54 or better enclosure)	NEMA 12, IP 65	
DIN rail mountable	Yes	No	
Diagnostic indicators/capabilities	General fault LED	Run and stop LEDs, 4 mat activated and 4 mat disconnected LEDs	Run and stop LEDs, 8 mat activated and 8 mat disconnected LEDs, 2 circuit diagnostic modes & 2 relay pack diagnostic LEDs
Operator-visible lights	No	Yes	
Optional quick disconnects	No	Yes	
Installation location	Inside machine control cabinet	At the operator station	



The power of control. Automated.

4-Year Mat Warranty

All Larco mats are made in the USA

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Safety, Security and Activation Solutions Since 1957

Quality

An important part of ATEK's commitment is the dedication to quality. Every Larco product must pass a rigorous quality inspection program. ATEK is ISO 9001 certified, and utilizes manufacturing quality principles such as lean manufacturing. While good solid processes and procedures are important to make quality products, it is the people at ATEK who make it happen. ATEK has some of the most experienced and talented individuals who fulfill ATEK's commitment to quality each and every day.



Service

A quality product must be backed by exceptional service, and this is where ATEK shines. ATEK is committed to providing on-time-delivery of defect-free products. With well trained and experienced people who provide great service and technical support, the entire ATEK team stands ready to serve its customers.

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