



A full spectrum of sensing and signaling products for protection, detection, and safety



## TRANSPORTATION PRODUCTS

**Treadle Mats**

**Passenger Signaling**

**Door Edges**



## About Tapeswitch Corporation

Tapeswitch is a leading designer and manufacturer of passenger signaling switches, treadle mats, and pressure-sensitive door edges for the transit industry.

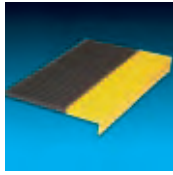
Our passenger signaling devices use ribbon switch technology and include unique low-maintenance, tamper-resistant designs which can include annotations and graphics.

Our treadle and wheelchair lift mats are available in any shape or size, and can be provided in either single and multizone models. These products can also be color-coordinated to match vehicle color schemes.

We offer a wide range of specialty switches and sensing mats which accommodate the special needs of disabled passengers and that are designed to meet ADA requirements.



## Pressure-Sensitive Switch Mats



### 2 ■ **Matex® Treadle Switch Mats**

For door operation, safety, and passenger counting  
1 or 2 zones, choice of colors

## Passenger Signaling Switches



### 4 ■ **Ribbon Switches**

Press-at-any-point signaling  
Available in any length



### 5 ■ **NexGen™ Vandal-Resistant Linear Switches**

Enclosed in a rugged housing  
Accommodates graphics and text



### 6 ■ **ADA & Specialty Switches**

Touch Pads, two-sided switches, pole and rail switches  
Graphics, text, and color matching available

## Pressure-Sensitive Door Edges



### 7 ■ **Custom Electrically-Operated Sensing Edges**

The exceptional reliability of electrical operation  
Custom-designed for exact application match

## Related Products



### 8 ■ **Other Switching and Signaling Products**

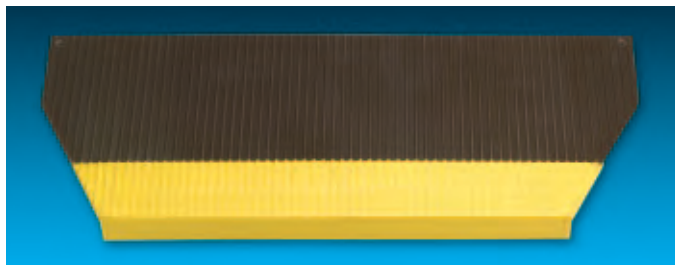
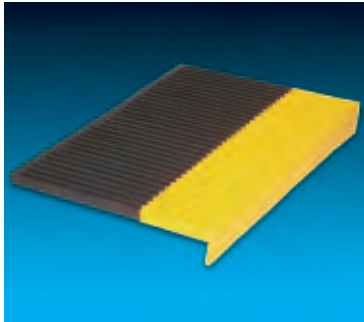
Examples from our selection of thousands of standard and custom products

# MATEX® TREADLE SWITCH MATS

## Safety, door control, and passenger counting

**Matex® Treadle Mats** are used on buses, trains, and trams for door safety, door opening, and passenger counting. They can also be used at electric turnstiles or gates, ticket dispensing equipment, and other traffic control installations in the transit industry. Treadle mats are usually specifically designed for each application.

Customers for Matex® Treadle Mats have included the following companies and transit authorities: Nova Bus, New Flyer Industries, Orion Bus, S.N.C.F., Amtrak, British Railways, Renault, Transit Authorities in Paris, Melbourne, Sydney, Toronto, Winnipeg, Edmonton, Vancouver, Copenhagen.



### Features & Benefits

- Molded design and durable switching technology provide long operating life
- Simple screw-down mounting system for easy installation and maintenance
- Cutouts available to accommodate door pivots, door guides, hand rails, etc.
- Standard or custom colors can be used to match vehicle color scheme
- Two-zone models available to implement “open” and “hold” door functions
- Many standard sizes available that fit existing vehicles
- Easily customized for new applications or retrofits

### Two-Zone Models

Mats with two active zones add an extra measure of safety and convenience. Zone One, toward the bus interior, opens the doors when stepped on. Zone Two, nearest the opening, holds the doors open when stepped on. Multizone mats are also commonly used, singly or in pairs, for very reliable passenger counting.

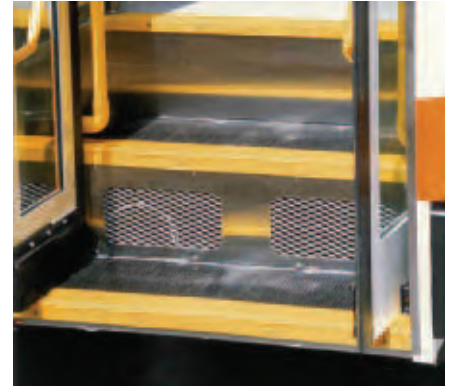
### Custom-Molded Logos

Your company logo in any color or combination of colors can be molded directly into any Matex® Treadle Mat. These products can also be color-coordinated with your vehicle interior.

## Safety, door control, and passenger counting

Usually placed in the front or rear stairwells of a vehicle, a treadle mat sends a signal when stepped on. This signal usually serves one of four functions:

1. To prevent the doors from closing on a passenger who is standing in the stairwell.
2. To open the doors for an exiting passenger when the bus is stopped and the driver has applied power to the doors. The passenger steps down on the mat and the doors open.
3. To be used as part of a passenger counting system, either for collecting route statistics or reconciling rider count to fees collected.
4. Installed on wheelchair lifts to signal the operator that the wheelchair is in position for lift operation. It can also detect an object on the lift and prevent it from being stowed until cleared.

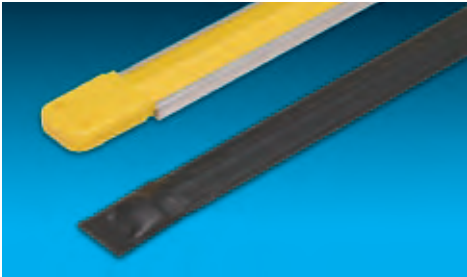


### Specifications

|                               |  |
|-------------------------------|--|
| Material                      | Molded PVC with ribbed top   |
| Recommended Voltage & Current | 12 to 48 Vdc or Vac at 1.0 amps max.                                       |
| Product Life                  | One million actuations   |
| Environment                   | NEMA 4 & IP65 rated, -35 to 120°F (-35 to 50 °C)                           |
| Actuation Force               | Between 5 and 42 lbs with 2-5/8" disc per industry standards               |
| Maximum Force                 | 1000 lbs/in <sup>2</sup> (70 kg/m <sup>2</sup> ) direct static compression |
| Weight                        | Approximately 4 lbs/ft <sup>2</sup> (19.5 kg/m <sup>2</sup> )              |

# RIBBON SWITCHES

## Low profile, long life, and up to 40' length



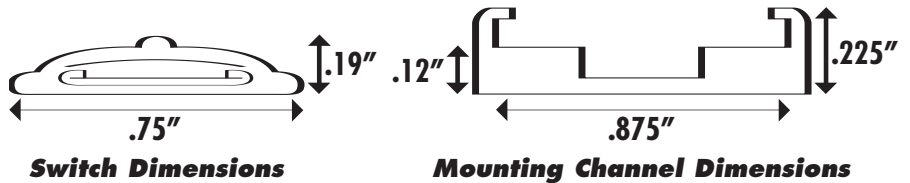
### Types 101-B & 101-BMT

This heavy-duty ribbon switch is particularly well-suited for passenger signaling applications. It can be provided in lengths as short as 6 inches for local switching or long as 40 feet to cover the vehicle interior from front to back. For each application, the switch length is tailored to customer specifications.

Two termination options are available: Sleeve ends (Type 101-B) or block ends (Type 101-BMT), as shown in the photograph. Block ends have mounting holes for fastening down the switch ends. Additionally, they allow the wiring to be concealed by exiting through the bottom of the block. Standard color options are yellow and black, but custom colors are available.



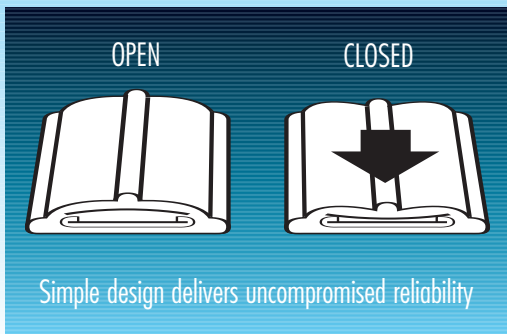
Type 106 Aluminum Mounting Channel is available for either switch style. The photo shows Type 101-BMT Ribbon Switch channel-mounted.



### Specifications

|                               |  |
|-------------------------------|--|
| Activation Force*             | 24 oz (7 N) nominal                      |
| Recommended Voltage & Current | 12 to 48 Vdc or Vac @ 1.0 amps max       |
| Exterior Covering             | PVC                                      |
| Color                         | Yellow or Black                          |
| Dimensions                    | 3/4" wide, 3/16" high (19.1 mm x 4.8 mm) |

### Ribbon Switches



A ribbon switch is a thin, continuous, normally-open switch that can be made in nearly any length. It provides a momentary contact closure when pressed at any point. Ribbon switch is simple and reliable, and has a life expectancy of over 3 million operations at any point.

Construction consists of a bottom conductor separated by an insulating strip from an upper conductor, all enclosed in an insulating housing. It is self-bottoming, and does not require the linkages, mountings, or interfaces of conventional sensing switches. Simple pressure completes the electrical contact. Life expectancy is over 3 million operations at any point. Ribbon switch is manufactured in a continuous process and is then cut to length and terminated, as required, to make the finished product.

# NEXGEN™ VANDAL-RESISTANT SWITCHES

## Passenger signaling switch with graphics

The **NexGen™ Passenger Signaling Switch** is a momentary-contact, press-at-any-point linear switch which is enclosed in a rugged Lexan® housing. It is designed for situations where switch size, visibility, and ease of operation are important, or where switch damage through abuse or vandalism is a problem. The construction of the switch allows it to withstand abuse that might destroy ordinary surface-mounted switches.

It is typically used in signaling applications such as Stop Request, Ramp Request, and Handicap Call Signal. This switch is ideally suited for Americans with Disabilities Act Applications.

The **NexGen™ Passenger Signaling Switch** is available in standard lengths up to 72". Custom inserts can be added to match color schemes or to provide graphics or instructional text. Simple surface mounting ensures ease of installation in new or retrofit applications.



### Features & Benefits

- Clear, impact-resistant cover to:
  - Survive rough or abusive use
  - Resist vandalism or tampering
  - Protect internal labels
- Custom color, graphics, and labels to:
  - Match equipment or area color schemes
  - Provide operating instructions
- Press-at-any-point operation
- Surface mounting
- Meets requirements for ADA applications



### Specifications

|                                     |                                     |
|-------------------------------------|-------------------------------------|
| Activation Force .....              | 5 lbs (22 N) nominal                |
| Recommended Voltage & Current ..... | 12 to 48 Vdc or Vac @ 1.0 amps max. |
| Design Life .....                   | Over 3 million actuations           |
| Options .....                       | Colored inserts, graphics, or text  |



# ADA & SPECIALTY SWITCHES

## Touch Pads, Two-sided Switches, Pole and Rail Switches

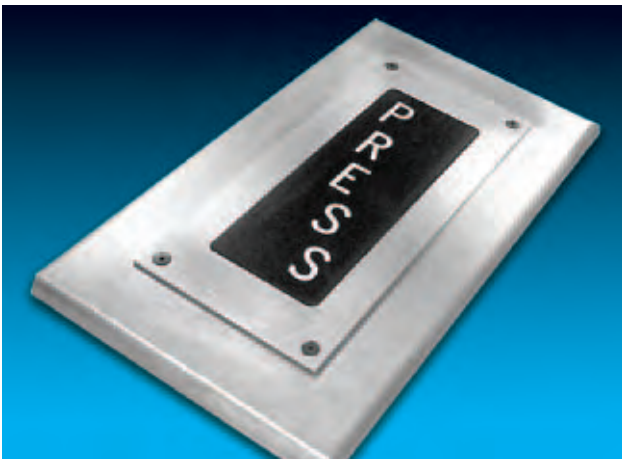
### Touch Pads



Touch pads have been designed to accommodate the special needs of handicapped passengers. They provide a large, active area and can be operated with a touch, push, slap, or elbow. Surface mounting design makes installation very easy during initial vehicle construction or later, as a retrofit.

Colors can be customer-specified and these products can include logos, text, and graphics to suit the application.

### Advanced Press Switch



This switch assembly is designed to be door or frame-mounted, such that both sides can be activated by a passenger. It is custom-manufactured to accommodate any door or wall thickness and is typically used to control magnetic locks in subway, train, and monorail applications. This unit is weather and wash-down resistant. It is available in both single and double-sided versions. The large 2.6" by 6.1" active surface makes it ideal for handicap access or anywhere a large switch is required or desirable.

### Pole-Mounted and Railing-Mounted Switches



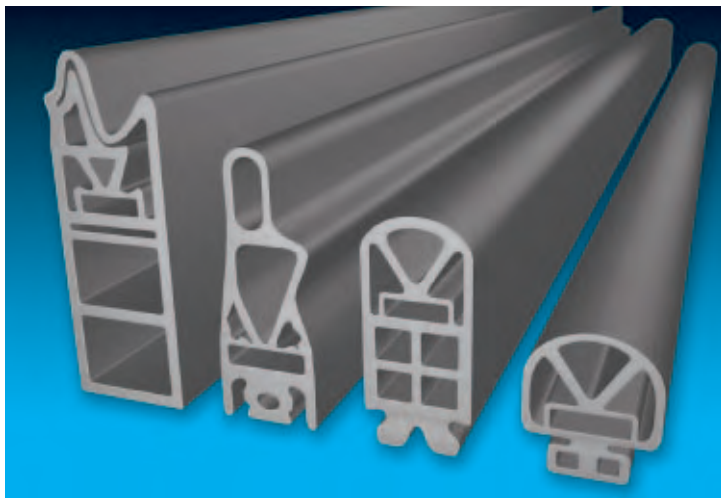
These switches can be surface-mounted or flush-mounted in pole or railing assemblies. Tapeswitch can provide just the switch or an entire subassembly as shown in the hand rail photo to the left.

These units use NexGen™ switch technology and are extremely durable. They can include instructional text or graphics and can be color-coordinated with the vehicle interior design.

## Protects passengers from unexpected door closures

Tapeswitch pressure-sensitive door edges employ normally-open, momentary-contact ribbon switches, which can signal the door control when an obstacle is encountered. They feature a 4-wire, fail-safe lead configuration which enables detection of opens and shorts in the switches or interconnecting wiring, when used with an appropriate controller.

These electrical sensing edges operate more consistently and reliably than their pneumatic counterparts. In many cases, they will continue to work with physical damage that would render pneumatic systems inoperable.



### Features and Benefits

- Precise and repeatable operation
- Fail-safe wiring permits self-diagnosis
- Suitable for buses, trains, or light rail vehicles
- Switching element is field replaceable
- Custom designed to exactly match application requirements
- Can be installed on bent or curved surfaces

Pressure-sensitive door edges are custom designed to exactly meet application requirements; either new designs or retrofits to replace less reliable pneumatic units.

Characteristics such as cross-section, sensitivity, compliance, and overtravel can be tailored to match the unique requirements of the application.

### Specifications

|                               |                                     |
|-------------------------------|-------------------------------------|
| Sensitivity                   | Customer specified                  |
| Design Life                   | 3 million operations at any point   |
| Housing                       | Santoprene, EPDM, or PVC            |
| Recommended Voltage & Current | 12 to 48 Vdc or Vac @ 1.0 amps max. |
| Color                         | Black (Custom colors available)     |

### Definition of terms

#### Profile

The cross-section of the sensing edge. It varies in height and width, number of compartments, and mechanical elements, all of which determine the operating characteristics.

#### Sensitivity

The amount of deformation of the sensing edge before the internal switch operates. High sensitivity provides immediate switch operation with little compression of the edge. Lower sensitivity requires more deformation and gives some immunity to false or inadvertent operation.

#### Overtravel

The amount of deformation of the sensing edge after the switch operates. Overtravel determines the amount of cushioning after contact with the edge.

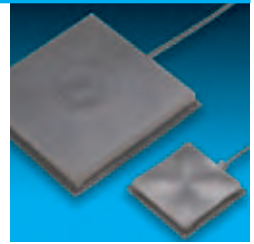


# OTHER SWITCHING AND SIGNALING PRODUCTS

Since Tapeswitch invented Ribbon Switches more than 50 years ago, this technology has been incorporated into thousands of standard and custom switching, signaling, and sensing products. Below are examples of some of these.

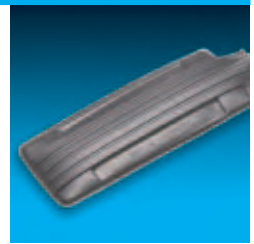
## **Touchpads** – Large active areas of 4 or 16 square inches.

Normally-open, press-to-activate switches that are highly water resistant and easily mountable using a frame or adhesive. Custom touchpads are available in five different colors and with logos, text, or graphics. Suitable for emergency stops, door operation, ADA applications or anywhere a large switch is required.



## **Foot and Hand Switches** – Can be pressed, squeezed, or stepped on to activate.

Standard models are available, or Tapeswitch can design and manufacture custom models to your specifications. Suitable for fixed mounting or tethered for when the switch position needs to be moved.



## **Vehicle Sensing Products** – Road switches and mats.

Used for process control or vehicle counting, these switches are extremely rugged and long lasting. They are sealed for weather and water resistance.

Available in rigid and flexible models, ramped for surface mounting and square-edged for flush mounting. Available in lengths up to 16 feet.



## **VB-Series High-Impact Sensing Bumpers** – Provide switch closure on contact.

Designed to survive repeated crushing impacts that would destroy a conventional bumper. Provides uniform sensitivity over the entire bumper surface, and requires no guide wires or adjustments.

Suitable for use on AGVs, mobile work platforms, and other moving equipment and machinery.



## **Interface Controllers** – Compatible with Tapeswitch mat and switch products.

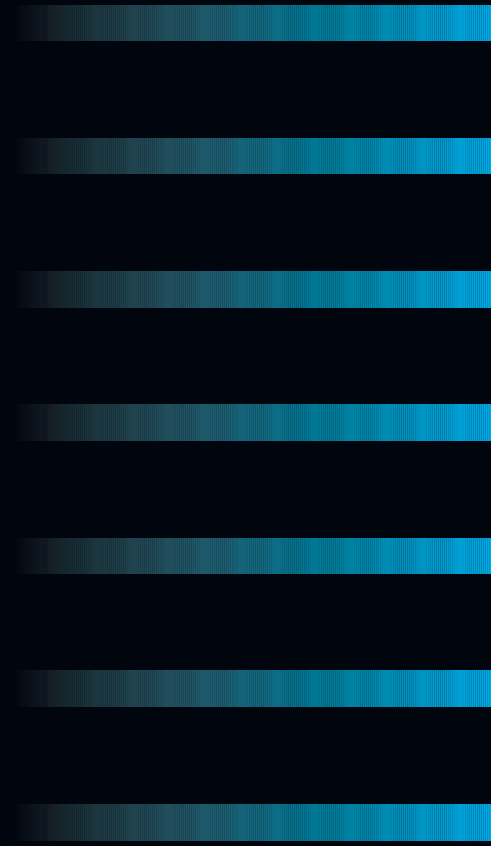
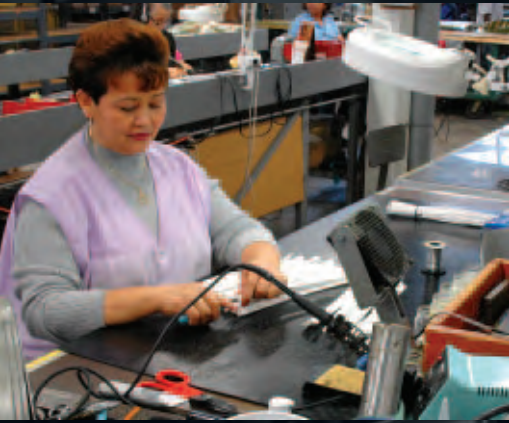
Select from a wide variety of interface controllers that are available in a choice of mounting styles, voltage ranges, status indicators, and reset options.

Most models feature fail-safe design to detect faults in the controller, sensing switch, and interconnecting wiring.





Because we are constantly improving our products, specifications are subject to change without notice.



A sample of industries we serve.



**MANUFACTURING**

**MILITARY**



**MINING**

**MEDICAL**



**TRANSPORTATION**

**ENTERTAINMENT**



Please refer to our web site to locate your nearest representative.



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