How can I determine my garage door requirements?

Step 1:
Determine your Risk Category based on the description given below. Risk Categories are defined based on the nature of occupancy:
- **Category I**: Buildings such as agricultural and storage facilities representing low hazard to human life.
- **Category II**: All buildings not listed in Categories I, III and IV. This is the default for "typical" buildings.
- **Category III**: Buildings such as schools, nursing homes, public facilities, power generating and water supply installations that represent substantial hazard to human life.
- **Category IV**: Essential facilities, such as hospitals, fire and police stations, shelters, airport control towers and defense installations.

Step 2:
Using the appropriate map below, determine the Minimum Wind Speed (MPH) required for your location. If you are unsure, contact a county or local municipality building official for the specific requirement.

Step 3:
Determine the Exposure Category based on the building location.
- **Exposure A**: Urban areas.
- **Exposure B**: Urban and suburban areas, wooded areas or other terrain with numerous closely spaced obstructions.
- **Exposure C**: Open terrain with scattered obstructions, including flat open ground and grasslands.
- **Exposure D**: Within 600 ft. of ocean front or other large body of water, measuring at least 5,000 ft. across.

See Page 5 for further explanations of Exposure Categories.

Step 4:
Determine the Mean Roof Height (MRH) (single or double story) of the building.

Step 5:
Find the required Design Pressure based on the previous information gathered from Steps 1, 2, 3 and 4 by using the charts on the following page.

### What design pressure do I need?

After reviewing the steps on the previous page, use the information gathered to find the correct design pressure.

#### Garage Door Wind Load Guide - Values in PSF

<table>
<thead>
<tr>
<th>Mean Roof Height</th>
<th>Door Size</th>
<th>Based on the 2010/2014/2017 Florida Building Code Exposure B, 115-200 MPH Ultimate Wind Speed (V, uft)</th>
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</thead>
<tbody>
<tr>
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<td>115 MPH</td>
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<td>Ultimate Wind Speed</td>
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<tr>
<td></td>
<td>Double 16' x 7'</td>
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<tr>
<td>Equivalent Nominal Wind Speed</td>
<td>89 MPH</td>
<td>93 MPH</td>
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<table>
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<th>Mean Roof Height</th>
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<td>115 MPH</td>
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<tr>
<td></td>
<td>Ultimate Wind Speed</td>
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<td>15 Feet Single Story</td>
<td>Single 9' x 7'</td>
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<tr>
<td>Equivalent Nominal Wind Speed</td>
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<td>93 MPH</td>
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<tr>
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<td>Ultimate Wind Speed</td>
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<td>25 Feet Double Story</td>
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<tr>
<td>Equivalent Nominal Wind Speed</td>
<td>89 MPH</td>
<td>93 MPH</td>
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</tbody>
</table>

For the Commercial Door Wind Load Guide, see Technical Data Sheet #1551 on the DMA website or contact your local municipality building official for specific requirements and building codes.
### What's available from Haas Door?

Find the width of your door, then find the design pressure requirement. If the option desired is unavailable at that required design pressure, go to a higher pressure with the desired options available.

#### FLORIDA WIND LOAD (Excluding Miami-Dade)

<table>
<thead>
<tr>
<th>DESIGN PRESSURE (PSI)</th>
<th>DOOR WIDTH</th>
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**NOTE:** Door heights available up to 14’ high.

#### MIAMI-DADE WIND LOAD

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</table>

**NOTE:** Door heights available up to 16’ high.

The following Haas Door products have received NOAs, issued by Miami-Dade County. This approval certifies the products have passed required testing and are approved for use in the High Velocity Hurricane Zone.

- **600, 700, & 2000 Series**
- **5700 & 5300 Series**
- **2000 & 2400 Series**

- **High Velocity Hurricane Zone (HVHZ)**
  - **H** = HVHZ (High Velocity Hurricane Zone)
  - **P** = Residential Aluminum 365 Series
  - **FV** = With Full-View
  - **L** = Lites Available
  - *** = Impact Resistant

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**Miami-Dade County**
- Risk Category I Buildings and Structures: 165 mph
- Risk Category II Buildings and Structures: 175 mph
- Risk Category III and IV Buildings and Structures: 185 mph

**Broward County**
- Risk Category I Buildings and Structures: 156 mph
- Risk Category II Buildings and Structures: 170 mph
- Risk Category III and IV Buildings and Structures: 180 mph

**663 American Walnut**
Frequently asked questions and definitions

**What is the difference between wind speed and wind pressure?**

Wind pressure represents the force exerted by wind. It is calculated starting with wind speed, but is greatly dependent on a number of factors related to the structural configuration and site location. It is not enough to say a product will meet a given wind speed alone. Basic wind speed, exposure categories, importance factor, mean roof height, door area, door location on the building and wind directionality factor are all used to calculate wind pressures on garage doors.

NOTE: See DASMA Technical Data Sheet #194 - PSF versus MPH in Door Specifications for more information.

**Why are wind pressures better than wind speeds when specifying doors?**

Wind pressure equates to the amount of work or energy that the wind expends due to its velocity or speed. This energy or work can be either calculated or tested. It is not enough to only say a product will meet a given wind speed which is measured in miles per hour.

NOTE: See DASMA Technical Data Sheet #194 - PSF versus MPH in Door Specifications for more information.

**What does impact rated mean?**

Impact rated (or impact resistant) refers to the ability of the garage door and garage door glazing to resist penetration from flying debris during a high wind event.

**What is the difference between Exposure B, Exposure C, and Exposure D?**

An exposure category (B, C, or D) is a condition that adequately reflects the characteristics of ground surface irregularities for the site where a structure is located. Exposure category is used in calculating the required design wind pressures for a structure with exposure B yielding the lowest wind pressures and exposure D yielding the highest wind pressures.

**Exposure B** applies to urban and suburban areas, wooded areas or other terrain with numerous closely spaced obstructions having the size of single-family dwellings or larger. Exposure B is typically associated with site locations in a residential subdivision. Most site locations are assumed to be Exposure B unless the site meets the definition of another type of exposure.

**Exposure C** applies to open terrain with scattered obstructions having heights generally less than 30 feet extending more than 1,500 feet from the building site. Exposure C includes flat open country, grasslands, and shorelines in hurricane-prone regions.

**Exposure D** applies to flat, unobstructed areas exposed to wind flowing over open water (excluding shorelines in hurricane-prone regions) for a distance of at least 1 mile. Exposure D includes shorelines in inland waterways, the Great Lakes, and coastal areas of California, Oregon, Washington, and Alaska. Exposure D extends inland from the shoreline a distance of 1,500 feet or 10 times the height of the building or structure, whichever is greater.

Exposure conditions C and D were redefined with the publication of ASCE 7-98. In that document, shorelines in hurricane-prone areas became classified as “Exposure C,” and shorelines qualifying as Exposure D were more clearly described (inland waterways, the Great Lakes and coastal areas of California, Oregon, Washington, and Alaska.) ASCE 7-10 once again included the Gulf and ocean shorelines as Exposure D.

**Why are positive and negative wind load values required?**

In a high wind event, both positive and negative pressures are generated on the garage door. Positive pressures are loads that try to push your garage door into the building, and negative pressures try to pull the door out of the building. Whether push or suction occurs on a garage door is dependent on wind direction and the direction the garage door faces.

**How do I know what the wind pressure requirements are for my garage door?**

DASMA has a helpful Technical Data Sheet (#155I), and the DASMA web site has a wind load calculator that can estimate the wind load requirements on your garage door. However, the building department having authority in your area is the sole and final determiner of the wind load requirements for your garage door. Always check with either a county or a local municipality building official for specific requirements.

**Definitions:**

- **Design Pressure:** The measurement of resistance in both positive and negative directions that a door system must withstand. Design pressures are expressed in pounds per square foot (psf) and are expressed in both positive and negative values. Also known as design load.

- **Test Pressure:** The actual test wind pressure resistance that a door system will withstand during laboratory testing. Most building officials usually require that the test pressure be equal to 150% of the design pressure. Also known as the test load or ultimate load.

- **Wind Velocity:** The actual measured speed of airflow during a wind event; usually expressed in MPH. Wind velocity is typically measured at 33 feet (10 meters) above ground level at airports and similar open country locations. Also known as Basic Wind Speed and is used in the design pressure calculation.

**Acronyms:**

- **DASMA:** Door & Access Systems Manufacturers Association
- **ANSI:** American National Standards Institute
- **NOA:** Notice Of Acceptance
- **HVHZ:** High Velocity Hurricane Zone
- **ASCE 7:** American Society of Civil Engineers, Minimum Design Loads and Associated Criteria for Buildings and Other Structures which is the basis for wind load calculations used in most building codes.
- **ANSI:** American National Standards Institute. A private, non-profit organization that administers and coordinates the U.S. voluntary standards and conformity assessment system.
- **MRH:** Mean Roof Height. The height above grade level of the midpoint of the roof. Mean roof height is calculated by averaging the eave and ridge heights, and is used in the design pressure calculations.
Need more info?

DASMA:
www.dasma.com

DASMA Standards:

ANSI/DASMA 108:
Test standard for testing garage door to loads generated by the wind. This test is known as the Determination Of Structural Performance Under Uniform Static Air Pressure Difference.

ANSI/DASMA 115:
Test standard for testing garage doors to load generated by flying debris typically found in high wind events. This test is known as the Determination Of Structural Performance Under Missile Impact and Cyclic Wind Pressure.

DASMA Technical Data Sheets (TDS):

TDS #155 Residential and Commercial Wind Load Guides:

Garage Door/Rolling Door Wind Load Calculator:
based on ASCE 7-98 / 7-02 / 7-05 (in Excel Format) or
based on ASCE 7-10 (in Excel Format)

Determine wind speed based on location:
www.windspeed.atcouncil.org

FLORIDA - Miami-Dade

Miami-Dade NOA File Search:
www.miamidade.gov/building/pb-search_app.asp

Florida Product Approval Search:
www.floridabuilding.org/pr/pr_app_srch.aspx

Florida Wind Speed Maps:

Who do I talk to?

Always check with either a county or a local municipality building official for specific requirements and building codes. It is important to also contact your homeowner’s insurance company. Many insurance companies may require or encourage doors that are different than those required by building code. Any Haas Door dealer in your area can also answer wind load and garage door related questions. To find a dealer in your area please visit: haasdoor.com/locator

Ver. 1.7 – 2/20

320 Sycamore
Wauseon, OH 43567

haasdoor.com

open the door to endless possibilities