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Sidewall-FLEX-54 Specifications Sheet

- Use: Antenna fastening on outdoor steel surfaces. These units are meant to provide reaction force and can be used in conjunction with other SidewallFLEX™ magnetic mounts
  - Common steel surfaces
    - Water towers
    - Wind Turbines
- FLEX™ magnetic sidewall brackets allow the magnetic arms to pivot to a variety of surfaces without tooling (See Page 4)
  - Flat
  - Convex (32” diameter or larger tubing)
  - Angled (see geometry for compatibility)
- Magnetic units: Fifty-four (54) magnet units of N42 rare-earth alloy composition. See calibrated testing matrix for yield-load values
- Material Specifications:
  - 25” L X 18.6” W X 5.7” H
  - Weight: 36.7 lbs
  - ASTM 304 Stainless Steel monolithic frame
  - (See page 5)
- Hoverbolt™ System allows bracket to be installed, adjusted and removed with command and control

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X & Y Axis Yield Definition

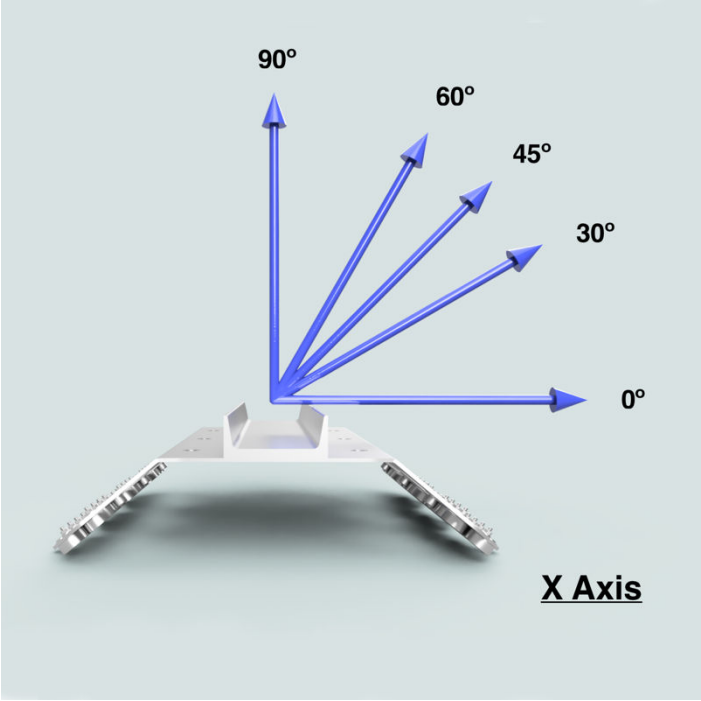
Magnetic force is tested to the yield condition of the bracket embodiment. For the purpose of the calibrated testing procedure, the yield point is defined as the average maximum tension force experienced which induces a deflection along the given axis of up to .25 inches parallel to the tested steel surface.

Z Axis Yield Definition

The yield point is defined as the maximum tension force experienced at the vertical (90 degree / Z axis) pull of breakpoint experienced if tested perpendicular to the floor.

Reporting

Results from these calibrated tension forces are aggregated into a spreadsheet with each procedure as the vertical column and the axis in the horizontal column. Please see below table for product testing of the Sidewall-FLEX-54 magnetic bracket. Video of all tests further record and confirm performance data. Please refer to Estech's Standardized Magnetic Testing Procedure Testing Program and Specifications document for further information.



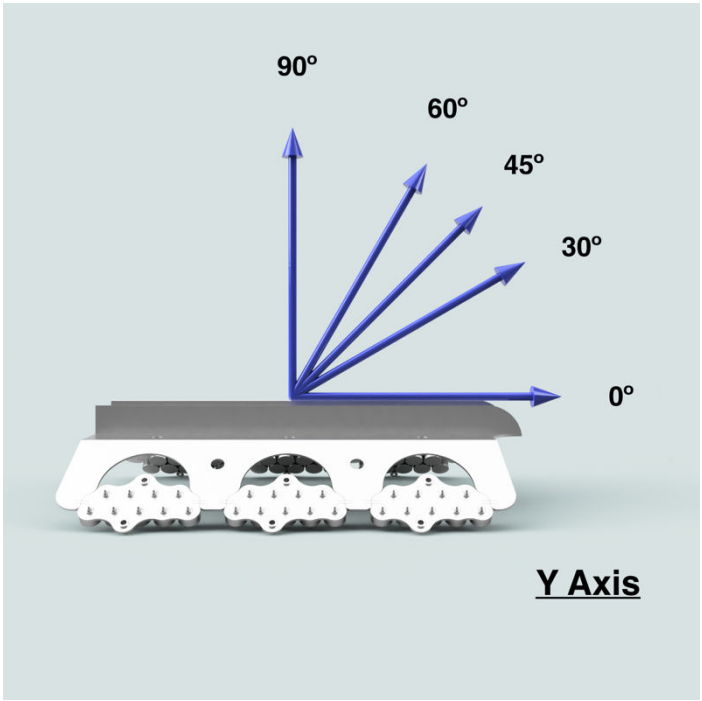


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Table 1: Working Load Table – 3X Safety Factor Recommended by ESTECH

Estech recommends a safety factor or 3X when the consumer load is compared to calibrated factory tested ultimate load data. This table below will aid in determining the correct magnetic bracket size for needed capacity. Review project CDs for on-center spacing requirements.

	0° Angle	30 ° Angle	45 ° Angle	60 ° Angle	90 ° Angle
X-Axis	352.83 lbf	326.5 lbf	336.2 lbf	377.2 lbf	
Y-Axis	382.8 lbf	lbf	368.2 lbf	407.7 lbf	
Z-Axis					534.3 lbf

Table 2: Working Load Table – Performance Data Testing by ESTECH

This magnetic bracket has been factory tested in a calibrated condition. Many factors influence the magnetic performance in outdoor settings such as; steel type and thickness, temperature, moisture, thickness of coating systems, coefficient of friction of coating system and direction of force. Estech has used 1/4" mild steel with a 10-12 mil AWWA compliant coating system at 70° Fahrenheit average at all stated axis and variable angular directions of tensile pull force (lbf). Magnetic force improves with; thicker steel, ferrous metal, thinner coatings, rougher coatings, colder temperatures at dry conditions. Estech formulated this calibrated test standard to best model conditions commonly seen on water tower and similar outdoor settings. Note: these are ultimate loads. Highest forces at a maximum displacement of .25" were recorded and averaged. The results are located in the table below.

	0° Angle	30 ° Angle	45 ° Angle	60 ° Angle	90 ° Angle
X-Axis	1,058.5 lbf	979.5 lbf	1,008.5 lbf	1,131.5 lbf	
Y-Axis	1,148.5 lbf	360.8 lbf	1,104.5 lbf	1,223.0 lbf	
Z-Axis					1,603.0 lbf

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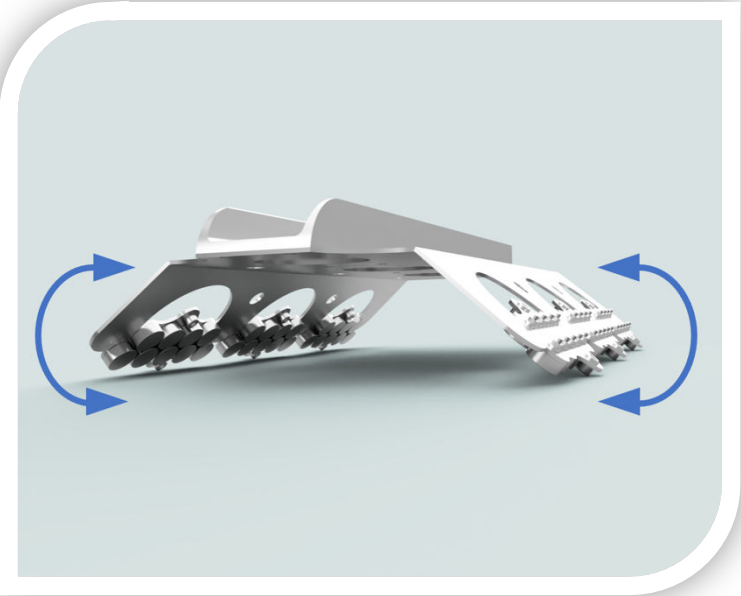
FLEX™ Technology

FLEX™ Technology allows Estech's Sidewall brackets to conform to a range of convex, concave, and flat surfaces without measurements. The magnetic pads are able to pivot to the tangency of the surface profile automatically during installation, supported by stainless steel "tendons" which allow the entire bracket body to be monolithically constructed. This compliant mechanism technology brings out the capability of lamina emergence and the strength of neodymium magnets.



Above: A depiction of the flexibility of the Flex™ Technology mechanism within a Sidewall-54-Flex mount.

Right: An example of three Sidewall-54-FLEX on a wind turbine; a convex surface.

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Drawings below are available in a separate document upon request.