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162VXS144-22 VIPER-X INTERIOR STUD

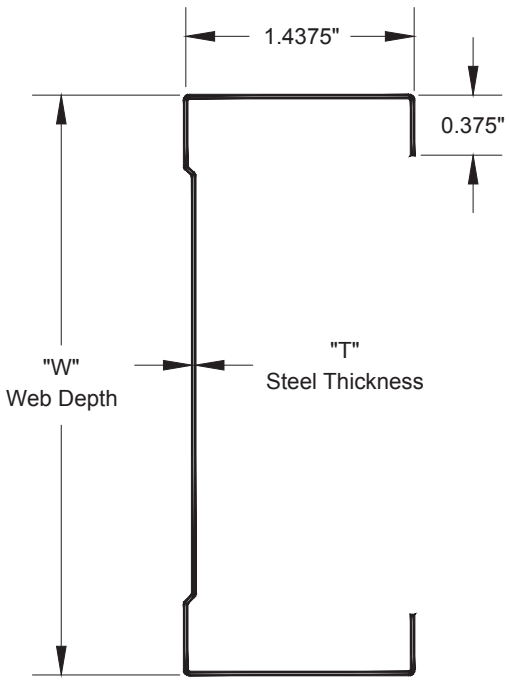
Geometric Properties

1-5/8" x 1-7/16" flange, Viper-X Studs are manufactured from standard G40 hot-dipped galvanized steel. G60 and G90 coatings are available through special order, and may require up-charges and extended lead times.

Steel Thickness

Member	Design Thickness (in)	Minimum Thickness (in)	Yield (ksi)	Web Sizes (in)	Coating[4,5]	Flange (in)	Return Lip (in)
162VXS144-22	0.0235	0.0223	57	1-5/8	G40	1-7/16	3/8

Notes: **1.** Uncoated steel thickness. Thickness is for carbon sheet steel. **2.** Minimum thickness represents 95% of the design thickness and is the minimum acceptable thickness. **3.** Knockout size for 1-5/8" Stud is 3/4" x 2". **4.** Per ASTM C645 & A1003, Table 1. **5.** G60 and G90 available upon request. Will require extended lead time and upcharge.



Color Code (painted on ends): Pink & Black

ASTM & Code Standards:

- ASTM A653/A653M, A924/A924M, A1003/1003, C645 & C754, E119
- IAPMO ER-0524
- IBC: 2012, 2015, 2018, 2021
- CBC: 2013, 2016, 2019
- AISI: S100, S220

LEED v4 for Building and Design Construction

- MR Prerequisite: Construction and Demolition Waste Management Planning.
- MR Credit: Construction and Demolition Waste Management.
- MR Credit: Building Product Disclosure and Optimization – Sourcing of Raw Materials, Option 2.
- MR Credit: Building Product Disclosure and Optimization – Environmental Product Declarations, Options 1 & 2.
- MR Credit: Building Product Disclosure and Optimization – Material Ingredients, Option 1.
- MR Credit: Building Life-Cycle Impact Reduction, Option 4.

CEMCO cold-formed steel framing products contain 30% to 37% recycled steel.

■ Total Recycled Content: 36.9% ■ Post-Consumer: 19.8% ■ Pre-Consumer: 14.4%

CSI Division: 09.22.16 – Non-Structural Metal Framing

162VXS144-22 Viper-X Section and Structural Properties

Yield Stress (ksi)	Web Height, h (in)	Design Thickness[3], t (in)	Gross Properties						Effective Properties					Torsional Properties					Critical Unbraced Length, Lu (in)
			Weight (lb/ft)	Area (in^2)	Ix (in^4)	Rx (in)	Iy (in^4)	Ry (in)	Ixe (in^4)	Sxe (in^3)	Ma-l (k-in)	Ma-d (k-in)	Vag (k)	J ($x\ 10^{-6}$) (in^4)	Cw (in^6)	Xo (in-k)	Ro (in-k)	ß	
57	1.625	0.0235	0.407	0.120	0.056	0.684	0.035	0.541	0.045	0.045	1.563	1.569	0.151	22.060	0.026	-1.322	1.584	0.303	28.80

Notes: **1.** Web height to thickness ratio (h/t) exceeds 200. Web stiffeners required at all support points and concentrated loads. **2.** Members having a web height to thickness ratio (h/t) value exceeding 260 will not have effective properties listed, only gross properties will be listed. **3.** Web height value (h) used for h/t calculation is the flat width of the web. For (S) members, this is the out to out member size, minus twice the thickness, minus twice the inside bend radius. **4.** Members having a flange width to thickness ratio (b/t) value exceeding 60 must be considered for use with the limitations described in AISI S100 & S220 section B1. **5.** Flange width value (b) used for b/t calculation is the flat width of the flange. For (S) members, this is the out to out member size, minus twice the thickness, minus twice the inside bend radius.

Non-Composite Limiting Heights – Braced at 48" O.C.

Depth (in)	Member	Yield (ksi)	Design Thickness (in)	Spacing O.C. (in)	5 PSF			7.5 PSF			10 PSF		
					L/120	L/240	L/360	L/120	L/240	L/360	L/120	L/240	L/360
1-5/8	162VXS144-22	57	0.0235	12	10' 8"	8' 5"	7' 5"	9' 4"	7' 5"	6' 5"	8' 5"	6' 9"	5' 10"
	162VXS144-22	57	0.0235	16	9' 9"	7' 9"	6' 9"	8' 6"	6' 9"	5' 11"	7' 9"	6' 2"	5' 4"
	162VXS144-22	57	0.0235	24	8' 5"	6' 9"	5' 10"	7' 5"	5' 10"	5' 1"	6' 8" f	5' 4"	4' 8"

Notes: **1.** Web height to thickness ratio (h/t) exceeds 200. Web stiffeners required at all support points and concentrated loads. **2.** Lateral loads of 5 psf, 7.5 psf, and 10 psf have NOT been reduced for strength or deflection checks. Full lateral load is applied. **3.** Limiting heights are in accordance with AISI S100 & S220 using all steel non-composite design. **4.** Limiting heights are established by considering flexure (f), web crippling (w) and deflection. **5.** Allowable moment is the lesser of Mal and Mad. Stud distortional buckling based on an assumed KΦ = 0. **6.** For bending, studs are assumed to be adequately braced to develop full allowable moment. **7.** Web crippling check is based on AISI S100 & S220 section C3.4.2 Condition 1: End One-Flange Loading with 1" end bearing.

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Non-Composite Limiting Heights – Fully Braced

Depth (in)	Member	Design (in)	Min (in)	Yield (ksi)	Spacing (o.c.)	5 PSF			7.5 PSF			10 PSF		
						L/120	L/240	L/360	L/120	L/240	L/360	L/120	L/240	L/360
1-5/8	162VXS144-22	0.0235	0.0223	57	12	10' 7"	8' 5"	7' 4"	9' 3"	7' 4"	6' 5"	8' 5"	6' 8"	5' 10"
	162VXS144-22	0.0235	0.0223	57	16	9' 8"	7' 8"	6' 9"	8' 6"	6' 9"	5' 10"	7' 8"	6' 1"	5' 4"
	162VXS144-22	0.0235	0.0223	57	24	8' 5"	6' 8"	5' 10"	7' 4"	5' 10"	5' 1"	6' 8"	5' 3"	4' 7"

Notes: **1.** Web height to thickness ratio (h/t) exceeds 200. Web stiffeners required at all support points and concentrated loads. **2.** Lateral loads of 5 psf, 7.5 psf, and 10 psf have NOT been reduced for strength or deflection checks. Full lateral load is applied. **3.** Limiting heights are in accordance with AISI S100 & S220 using all steel non-composite design. **4.** Limiting heights are established by considering flexure (f), web crippling (w) and deflection. **5.** Allowable moment is the lesser of Mal and Mad. Stud distortional buckling based on an assumed KΦ = 0. **6.** For bending, studs are assumed to be adequately braced to develop full allowable moment. **7.** Studs are fully braced when unbraced length is less than Lu. See section properties table for Lu values. **8.** Web crippling check is based on AISI S100 & S220 section C3.4.2 Condition 1: End One-Flange Loading with 1" end bearing.

Allowable Composite Heights for Non-Load Bearing Walls

Depth (in)	Member	Design (in)	Min (in)	Yield (ksi)	Spacing (o.c.)	5 PSF			7.5 PSF			10 PSF		
						L/120	L/240	L/360	L/120	L/240	L/360	L/120	L/240	L/360
1-5/8	162VXS144-22	0.0235	0.0223	57	12	14'-8"	11'-8"	10'-2"	12'-10"	10'-2"	8'-8"	11'-8"	9'-1"	7'-8"
	162VXS144-22	0.0235	0.0223	57	16	13'-4"	10'-7"	10'-0"	11'-8"	9'-1"	7'-9"	10'-7"	8'-1"	-
	162VXS144-22	0.0235	0.0223	57	24	11'-8"	9'-1"	-	10'-2"	-	-	9'-1"	-	-

Notes: **1.** Viper composite limiting heights are based on testing in accordance with ICC-ES acceptance criteria AC86. **2.** Limiting heights are established by considering flexure, shear, web crippling, and deflection. **3.** Mechanical fastening of gypsum panel to the stud and track is required, except when installing a minimum 30 mil slotted track with 2-1/2" legs in lieu of standard track. **4.** Viper-X composite limiting heights based on a single layer of 5/8" type X gypsum board applied vertically to both sides of the wall over full height. 5/8" Type X wallboard from the following manufacturers are acceptable: USG, National, Georgia-Pacific, PABCO, CertainTeed, & American. **5.** For deflection track usage contact Technical Services. **6.** For GWB installed horizontally, see table for "Non-Composite Limiting Heights-Fully Braced (see above).

Screw Allowable Loads (lbs.)

Member	Design Thickness (in)	Min. Thickness (in)	Fy Yield (ksi)	Fu Tensile (ksi)	#6 SCREW (0.138" Dia; 0.25" Head)		#8 SCREW (0.164" Dia; 0.3125" Head)		#10 SCREW (0.190" Dia; 0.340" Head)		#12 SCREW (0.216" Dia; 0.340" Head)	
					Shear	Tension	Shear	Tension	Shear	Tension	Shear	Tension
162VXS144-22	0.0235	0.0223	57	65	174[1]	60	184[1]	71	236[1]	82	152	93

Notes: **1.** Shear values are tested per AISI S100, S220 & S905 procedure. **2.** Capacities are based on section E4 of the AISI S100 & S220 Specification. **3.** Capacities are based on Allowable Strength Design (ASD). **4.** Screw pull-out capacities are based on listed head diameter. **5.** Two sheets of equal thickness and tensile strength are assumed in tabulated values. **6.** When materials of different steel thickness and tensile strength are connected, use the lowest value for shear capacity (tilting and bearing), for pull-out capacity use sheet closest to screw tip and for pull-over capacity use sheet closest to screw head. **7.** Where multiple fasteners are used, screws are assumed to have a center-to-center spacing of at least 3 times the nominal diameter. **8.** Screws are assumed to have a center-of-screw to edge-of-steel dimension of at least 1.5 times the nominal diameter of the screw. **9.** When screws are subjected to combination of shear and tension forces, interaction equation of AISI S100 & S220 Specification section E4.5 shall be used.