



Expanding Your Solutions

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400VS125-18-70 (20EQ) VIPERSTUD

Geometric Properties

4" x 1-1/4" flange, 18 mil ViperStuds 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

Model No.	Design Thickness (in)	Minimum Thickness (in)	Yield (ksi)	"W" Web Sizes (in)	Coating ^{4,5}	Flange (in)	"L" Return Lip (in)
400VS125-18-70 (20EQ)	0.0190	0.0181	70	4	G40	1-1/4	.338

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 4" Stud is 1-1/2" x 2-1/2". 4. Per ASTM C645 & A1003, Table 1. 5. G60 and G90 available upon request. Will require extended lead time and upcharge.

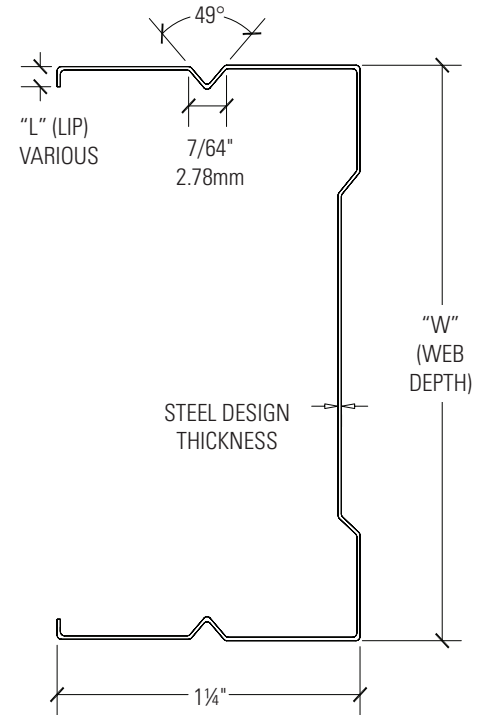
Color Code (painted on ends): 18 mil: None

ASTM & Code Standards:

- ASTM A653/A653M, A924/A924M, A1003/1003, C645 & C754
- ICC-ES & SFIA Code Compliance Certification Program
- ICC ESR-2620 ■ CBC: 2013, 2016, 2019
- IBC: 2012, 2015, 2018, 2021 ■ 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.



400VS125-18-70 (20EQ) ViperStud Properties

Design (in)	Min (in)	Yield (ksi)	Weight (lb/ft)	Gross Properties					Effective Properties		Moment				Critical Unbraced Length Lu (in)
				Area (in ²)	Ix (in ⁴)	Iy (in ⁴)	rx (in)	ry (in)	Ixd (in ⁴)	Sx (in ³)	Allowable Moment Ma (in-k)	Local Buckling Nominal Moment Mnl (in-k)	Distortional Buckling Nominal Moment Mnd (in-k)	Nominal Moment for Conventional Studs Mn (in-k)	
0.0190	0.0181	70	0.449	0.132	0.315	1.550	0.0266	0.449	0.265	0.085	3.44	5.93	5.74	5.74 (30 mil)	21.5

Notes: 1. Nominal Moments for Viper25 are based on testing. Allowable moment (Ma) is calculated with safety factor of 1.81 in accordance with chapter F of AISI S100 & S220 specification. 2. Nominal moment for Viper20, Viper 30mil, Viper 33mil and conventional studs are based on calculations per AISI S100. 3. Section properties are in accordance with AISI S100 & S220. 4. Web depth-to-thickness ratio exceeds 200. 5. Web depth-to-thickness ratio exceeds 260. 6. ViperStud is considered fully braced when the unbraced length is less than listed Lu. 7. K_D assumed to be zero for distortional buckling moments.

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

Depth (in)	Gauge	Member Designation	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
4	20EQ	400VS125-18-70 (20EQ)	0.0190	0.0181	70	12	18'-1"	15'-1"	13'-2"	14'-10"	13'-2"	11'-7"	12'-10"	12'-0"	10'-6"
		400VS125-18-70 (20EQ)	0.0190	0.0181	70	16	15'-8"	13'-10"	12'-0"	12'-10"	12'-0"	10'-6"	11'-1"	10'-11"	9'-6"
		400VS125-18-70 (20EQ)	0.0190	0.0181	70	24	12'-10"	12'-0"	10'-6"	10'-6"	10'-6"	9'-2"	9'-1"	9'-1"	8'-4"

Notes: 1. Limiting heights are in accordance with AISI S100 & S220 using all steel non-composite design. 2. Limiting heights are established by considering flexure, shear, web crippling and deflection. 3. Lateral-Torsional buckling moments are based on section C3.1.2.1 of AISI S100, with max discrete bracing of 48" o.c. 4. For web crippling, when h/t ≤ 200, the web crippling values are computed based on section C3.4.2 of AISI S100 & S220, when h/t > 200, the web crippling values are based on testing with a bearing length of 1". 5. No web stiffeners are required for studs with h/t > 200, web crippling and shear values have been confirmed by testing. 6. The factory punchouts are in accordance with section C5 of AISI S100 & S220. The distance from the center of last punchout to the end of the stud is 12". "f" - flexure controls; "s" - shear controls; "w" - web crippling controls. No letter next to the number means deflection controls.



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PAGE 2

Non-Composite Limiting Heights – Fully Braced

Depth (in)	Gauge	Member Designation	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
4	20EQ	400VS125-18-70 (20EQ)	0.0190	0.0181	70	12	19'-1"	15'-1"	13'-2"	16'-8"	13'-2"	11'-7"	15'-1"	12'-0"	10'-6"
		400VS125-18-70 (20EQ)	0.0190	0.0181	70	16	17'-4"	13'-10"	12'-0"	15'-1"	12'-0"	10'-6"	13'-1"	10'-11"	9'-6"
		400VS125-18-70 (20EQ)	0.0190	0.0181	70	24	15'-1"	12'-0"	10'-6"	12'-5"	10'-6"	9'-2"	10'-8"	9'-6"	8'-4"

Notes: 1. Limiting heights are in accordance with AISI S100 & S220 using all steel non-composite design. 2. Limiting heights are established by considering flexure, shear, web crippling and deflection. 3. For bending, studs are assumed to be adequately braced to develop full allowable moment. **Studs are considered fully braced when unbraced length is less than Lu. See section properties table for Lu values.** 4. For web crippling, when h/t ≤ 200,

the web crippling values are computed based on section C3.4.2 of AISI S100 & S220, when h/t > 200, the web crippling values are based on testing with a bearing length of 1". 5. No web stiffeners are required for studs with h/t > 200, web crippling and shear values have been confirmed by testing. 6. The factory punchouts are in accordance with section C5 of AISI S100 & S220. The distance from the center of last punchout to the end of the stud is 12".

"f" - flexure controls; "s" - shear controls; "w" - web crippling controls. No letter next to the number means deflection controls.

Allowable Composite Heights for Non-Load Bearing Walls

Depth (in)	Gauge	Member Designation	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
4	20EQ	400VS125-18-70 (20EQ)	0.0190	0.0181	70	12	22'-11"	18'-11"	16'-8"	20'-0"	16'-7"	14'-7"	18'-2"	15'-1"	13'-3"
		400VS125-18-70 (20EQ)	0.0190	0.0181	70	16	20'-10"	17'-3"	15'-2"	18'-2"	15'-1"	13'-3"	16'-6"	13'-8"	12'-1"
		400VS125-18-70 (20EQ)	0.0190	0.0181	70	24	18'-2"	15'-1"	13'-3"	15'-10"	13'-2"	11'-7"	13'-6"	11'-11"	10'-5"

Notes: 1. Viper composite limiting heights are based on testing in accordance with ICC-ES acceptance criteria AC86. 2. 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. 3. Viper 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, CertainTeed, American and Continental.

4. For deflection track usage contact Technical Services.
 5. Review fire related assemblies for any additional requirements.

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

Check the updated list of Certified Production Facilities at Intertek's website at <http://www.intertek.com/building/sfia>



This technical information reflects the most current information available and supersedes any and all previous publications effective February 8, 2023.

02-08-23 AT