



Expanding Your Solutions

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350VS125-33 (20 GA.) 33 KSI VIPERSTUD

Geometric Properties

3-1/2" x 1-1/4" flange, 33 mil 33 ksi ViperStuds are manufactured from G40 hot-dipped galvanized steel. G60 and G90 coating 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)
350VS125-33 (20 ga.)	0.0346	0.0329	33	3-1/2"	G40	1-1/4"	1/4"

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 3-1/2" Stud is 1-1/2" x 2-1/2". 4. Per ASTM C645 & A1003, Table 1. 5. G60 & G90 available upon request. Will require extended lead time and upcharge.

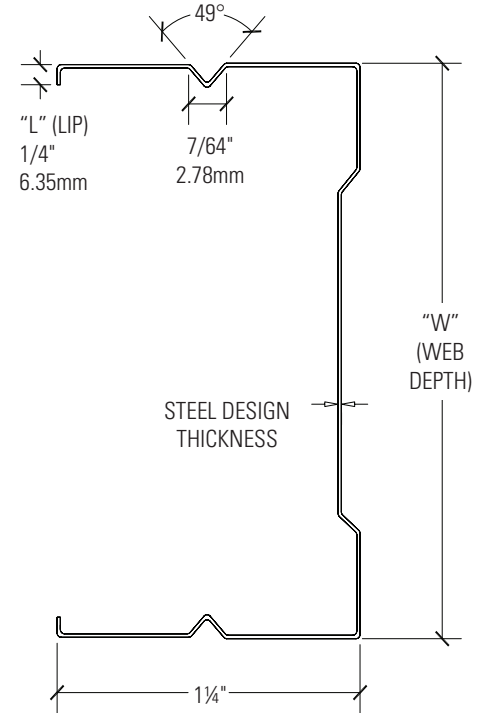
Color Code (painted on ends): 33 mil:

ASTM & Code Standards:

- ASTM A653/A653M, A924/A924M, A1003/1003, C645 & C754
- CBC: 2016, 2019, 2022
- IBC: 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.



350VS125-33 (20 ga.) 33 KSI ViperStud Properties

Design (in)	Min (in)	Yield (ksi)	Weight (lb/ft)	Gross Properties					Effective Properties		Moment				Critical Unbraced Length ⁷ Lu (in)
				Area (in ²)	Ix (in ⁴)	rx (in)	Iy (in ⁴)	ry (in)	Ixd (in ⁴)	Sx (in ³)	Allowable Moment Ma (in-k)	Local Buckling Nominal Moment ² Viper Mnl (in-k)	Distortional Buckling Nominal Moment ² Viper Mnd (in-k)	Nominal Moment for Conventional Studs ³ Mn (in-k)	
0.0346	0.0329	33	0.72	0.210	0.388	1.358	0.036	0.416	0.344	0.181	3.58	-	-	-	28.6

Notes: 1. Section properties are in accordance with AISI S100 & S220. Viper 25 and Viper20 section properties are based on testing. Allowable moment (Ma) is calculated with a safety factor of 1.81 in accordance with Chapter F of AISI S100/S220 specification. 2.

Nominal moment for Viper 18 mil, Viper 30 mil, and Viper 33 mil conventional studs are based on calculations in accordance with AISI S100/S220. Allowable moments (Ma) can be calculated with a 1.67 safety factor. 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 unbraced length is less than listed Lu. 7. K_D assumed to be zero for distortional buckling moments.



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362VS125-33 (20 GA.) 33 KSI VIPERSTUD

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
3-5/8	20	362VS125-33 (20 ga.)	0.0346	0.0329	33	12	20' 1"	17' 1"	14' 11"	15' 5"	14' 11"	13' 1"	14' 3"	13' 7"	11' 10"
		362VS125-33 (20 ga.)	0.0346	0.0329	33	16	17' 5"	15' 7"	13' 7"	14' 3"	13' 7"	11' 10"	12' 4"	12' 4"	10' 9"
		362VS125-33 (20 ga.)	0.0346	0.0329	33	24	14' 3"	13' 7"	11' 10"	11' 7"	11' 7"	10' 4"	10' 1"	10' 1"	9' 5"

Notes: **1.** Limiting heights are in accordance with AISI S100-16/S2-20 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 the L_u . See section properties table on page 5 for L_u values. **4.** For web crippling, when $h/t \leq 200$, the web crippling values are computed based on section G6 of AISI S100-16/

S2-20, 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 AISI standards. The distance from the center of the last punchout to the end of the stud is 12". **7.** Use non-composite tables when 1/2 inch gypsum board, horizontal board, RC channel, furring channel, or sound clips are used.

"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
3-5/8	25	362VS125-33 (20 ga.)	0.0346	0.0329	33	12	23' 0"	18' 3"	15' 11"	20' 1"	15' 11"	13' 11"	18' 3"	14' 6"	12' 8"
		362VS125-33 (20 ga.)	0.0346	0.0329	33	16	20' 11"	16' 7"	14' 6"	18' 3"	14' 6"	12' 8"	16' 7"	13' 2"	11' 4"
		362VS125-33 (20 ga.)	0.0346	0.0329	33	24	18' 3"	14' 6"	12' 8"	15' 11"	12' 8"	10' 10"	14' 4" f	11' 4"	9' 8"

Notes: **1.** Sheathing, as specified in Section 3.2.2, must be attached to both faces of the wall for the full height of the wall with the long dimension parallel to the studs. **2.** Sheathing must be fastened to the studs with fasteners as specified in Section 3.2.3 and installed per Section 4.2.1. **3.** Placement of joints in the gypsum sheathing must be in accordance with Sections 4.6.3 and 4.6.4 of GA-216 or Section 7.5 of ASTM C840. **4.** The bottom and top tracks are xxxVT125 (solid flange

track). A minimum 30 mil slotted flange track (xxxCST250 or xxxSLT250) may be used for the top track. **5.** End-bearing must be a minimum of 1 inch for xxxVT125 (solid flange track) and 1-5/8 inches for xxxCST250 or xxxSLT250 (slotted flange track). **6.** Notes 1, 2, & 3 are referenced in ICC ESR 2620 page 5. **7.** For any other top tracks not listed in note 4, please contact technical services for assistance. **8.** For GWB installed horizontally, see table for "Non-Composite Limiting Heights- Fully

Braced" (see above).

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 May 1, 2024.

05/01/2024 AT