



STRUT CHANNELS

STRUT CHANNEL & ACCESSORIES

ALLFASTENERS Strut is made from a pre-galvanized steel sheet that has been passed through a molten zinc bath. The protected sheet is cold formed into a C-Shape profile and slots are punched.



KEY BENEFITS

- Simple, quick installation
- Easy accurate cuts without additional measuring tools
- Customizable length per application requirements
- Clean, pre-galvanized finish can easily be painted
- High quality steel
- Rust resistance

SPECIFICATIONS

- C-profile channel with slotted holes
- Laser etched measure marks (inches)
- Prominent measure mark every 6"
- Pre-galvanized Steel as well as other finishes
- 10ft. & 20ft. In-stock
- Available for special order in hot-dip galvanized - 304 & 316 stainless steel

MATERIAL SPECIFICATIONS

Material

Carbon Steel: Channel is formed from high quality, structural grade carbon steel and has been manufactured in accordance with ASTM A570 specification Grade 33 (hot rolled) or ASTM-366 (cold rolled).

Stainless Steel: Channel is formed from chromium-nickel stainless steel manufactured in accordance with ASTM A420 specification offered in both AISI Type 304 and 316 material. Stainless steel is resistant to corrosion and is ideal for use in extreme ambient temperatures.

Finish

Pre-Galvanized: A hot dip mill galvanized coating is produced by continuously passing the steel through a bath of molten zinc in accordance with ASTM A653. This coating is applied to steel master coils prior to slotting and fabrication. Pre-galvanized steel is not recommended for outdoor, unprotected use. It is suitable for extended exposure in dry mildly corrosive environments.

Hot-Dip Galvanized (After Fabrication): The finished channel is completely immersed in a bath of molten zinc, resulting in the complete coating of all surfaces of the product, including edges and welds. Channel that is hot dip galvanized has a total coating weight of 3.0 ounces of zinc per square foot (1.5 ounces per side) in accordance with ASTM A123 specification. This coating provides superior results for prolonged outdoor exposure applications.

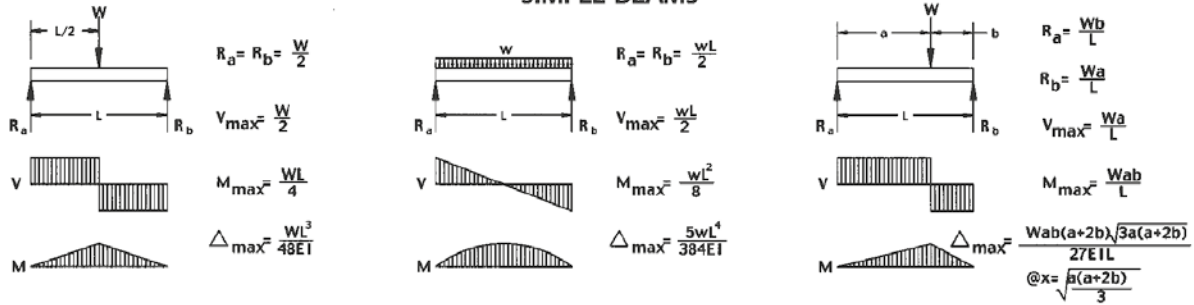
Green Powder Coated: Channel is coated after fabrication with a polyester powder finish. This coating provides a high quality appearance as well as surface durability. Once the channel is pre-treated and cleaned through a bonderite process, the coating is applied using an electro-static spray process. The channel then proceeds through a baking process which results in a chemical bond between the channel and the polyester powder finish.

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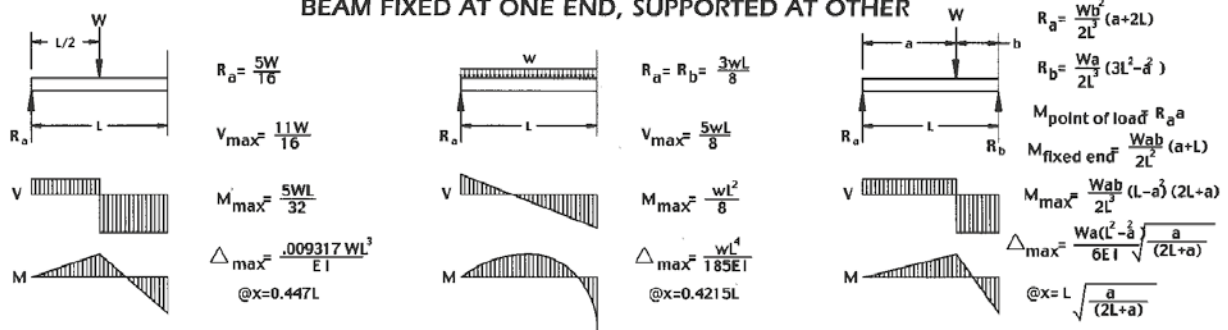
STRUT CHANNEL & ACCESSORIES

COMMON BEAM LOADING FORMULAS

SIMPLE BEAMS



BEAM FIXED AT ONE END, SUPPORTED AT OTHER

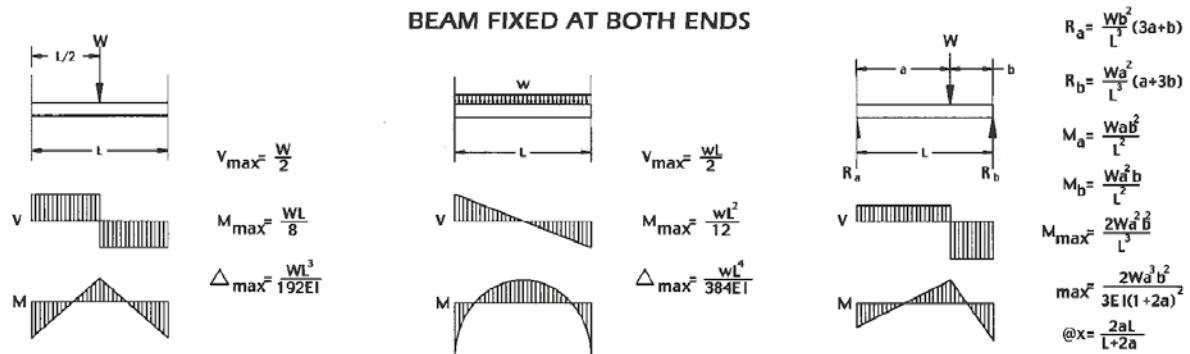


R- Reaction
M-Moment
W-Concentrated Load

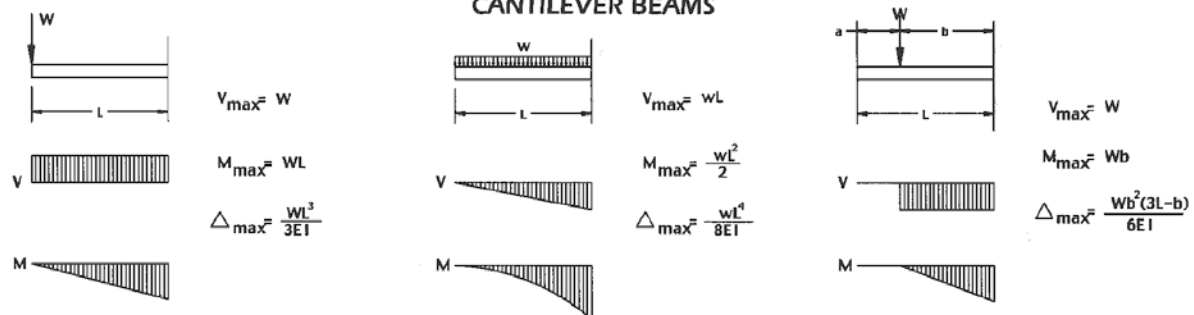
w-Uniform Load (Weight/Unit Length)
V-Shear
L-Length

Δ -Deflection
E-Modulus of Elasticity
I-Moment of Inertia

BEAM FIXED AT BOTH ENDS



CANTILEVER BEAMS



R- Reaction
M-Moment
W-Concentrated Load

w-Uniform Load (Weight/Unit Length)
V-Shear
L-Length

Δ -Deflection
E-Modulus of Elasticity
I-Moment of Inertia



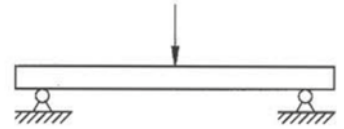
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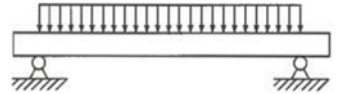
FUNDAMENTALS OF DESIGN

TYPES OF BEAM LOADING

Point Load - A point load is concentrated at a single point along the beam's span (in reality, the load is concentrated over a very small length of the beam).

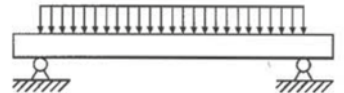


Uniform Load - A uniform load is spread evenly over the length of the beam from support to support.

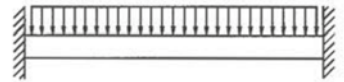


TYPES OF BEAM SUPPORT CONDITIONS

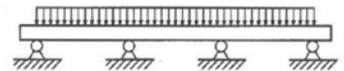
Simple Beam - A simple beam is supported at both ends by non-fixed connections which prevent vertical movement at the support point, but allow the beam to rotate or flex into a normal deflected shape. The majority of bolted metal framing connections closely approximate these conditions. The loading data presented in this TDS is based on simple beam analysis unless otherwise noted.



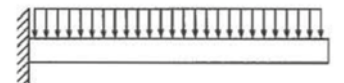
Fixed Beam - A fixed beam has rigid connections at each end that restrict the rotation of the beam and resist the deflection. The increased stiffness provided by this resistance to rotation provides a greater load capacity than that of an equivalent simple beam. A fixed-end beam would result when a channel span is welded to rigid upright supports.



Continuous Beam - A continuous beam rests on more than two supports. The outside spans for a continuous beam will act like simple beams, while the interior spans will behave in a manner similar to fixed beams.



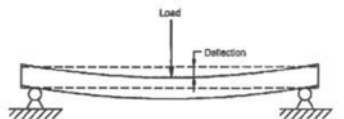
Cantilever Beams - A cantilever beam is supported by a fixed, rigid connection at one end and is totally unsupported at the opposite end. Shelf brackets and many of the strut brackets shown in this TDS are examples of cantilever beams.



LOADING AND DEFLECTION

All beams will deflect or "sag" when a load is applied. The magnitude of the deflection is dependent on the following factors:

- The amount of load plus the weight of the beam itself.
- The manner in which the load is distributed.
- The method by which the beam is supported.
- The cross sectional shape of the beam.
- The material from which the beam is made.





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FUNDAMENTALS OF DESIGN

LOADING AND DEFLECTION (CONT'D)

The stiffness of the beam derived from its cross sectional shape is defined by its "Moment of Inertia" or "I". The greater the "I" value of the beam, the greater its stiffness and the smaller its deflection. "I" values are given for both major axis (X-X and Y-Y). Increasing the height of the strut channel (Y-Y axis) is a straightforward way to increase its stiffness and lower its deflection.

The stiffness of the beam derived from its material composition is defined by its "Modulus of Elasticity" or "E". The greater the "E" value of the beam's material, the stiffer it is, and the smaller the deflection. A material's elasticity does not necessarily relate to its strength but rather its deflection under a given load.

The beam capacities in this TDS includes the weight of the beam itself. Therefore, the strut beam weight must be subtracted from the loading capacities given to provide the net beam capacity.

BEAMS

Beams are members which are subjected to loads at right angles (perpendicular) to their length. Most commonly, beams are horizontal and are therefore subjected to vertical loads usually related to gravity, i.e. - a shelf, platform or support for pipe or conduit. Loads cause beams to bend, called deflection. The ultimate consideration when designing a beam structure is whether or not it is strong enough. In other words, will it hold the anticipated load and provide a safety factor for unanticipated loads or other variations in conditions. A beam's ability to support a load is determined by its allowable bending moment and resulting amount of deflection. This load carrying ability is dependent on a number of factors: the amount of load, the type of load, the manner in which the beam is supported and the stiffness of the beam (a function of the beam's shape and the material from which it is made).

PROPERTIES OF SELECTION

PART #	W.t./F.t. lbs	AREA OF SECTION SQ. IN.	X-X AXIS			Y-Y AXIS		
			I in ⁴	S in ³	r in	I in ⁴	S in	r in
6SCG15810	1.94	0.544	0.180	0.195	05.75	0.233	0.287	0.655
6SCDB15810	3.88	1.088	0.896	0.570	0.908	0.466	0.574	0.655

I = Moment of Inertia
S = Section Modulus
r = Radius of Gyration



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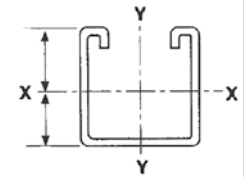
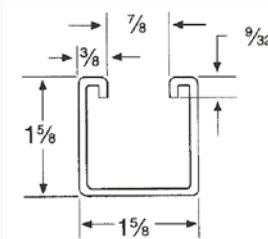
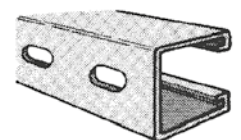
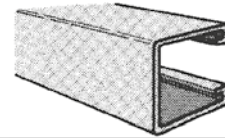
PRODUCT SPECIFICATIONS

6SCG15810

1-5/8 X 1-5/8 | 12 GAUGE STRUT | SOLID & SLOTTED

TYPE	FINISH	STANDARD LENGTH	WEIGHT PER FOOT (LBS)
SOLID	PLAIN,	10' OR 20'	1.90
SLOTTED	PRE-GALVANIZED GREEN COATED		1.85

NOTE: OTHER MATERIALS, FINISHES AND LENGTHS ARE AVAILABLE ON REQUEST.

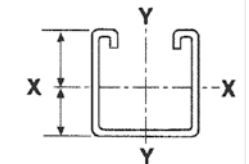
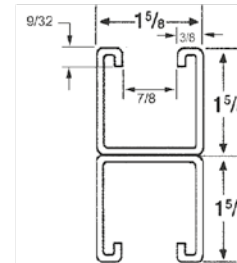
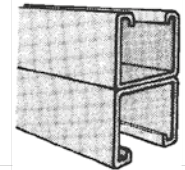


6SCDB15810

1-5/8 X 1-5/8 | 12 GAUGE STRUT BACK-TO-BACK STRUT | SOLID & SLOTTED

TYPE	FINISH	STANDARD LENGTH	WEIGHT PER FOOT (LBS)
SOLID	PLAIN,	10' OR 20'	3.80
SLOTTED	PRE-GALVANIZED GREEN COATED		3.70

NOTE: OTHER MATERIALS, FINISHES AND LENGTHS ARE AVAILABLE ON REQUEST.



PRODUCT SPECIFICATIONS

PRE-GALVANIZED, SHORT SLOT

PART #	SIZE (D x W x L)	GAUGE	QUANTITY / PALLET
6SCG131610	13/16 x 1-5/8 x 10ft	14ga	50 / PALLET
6SCG15810-14GA	1-5/8 x 1-5/8 x 10ft	14ga	50 / PALLET
6SCG15810	1-5/8 x 1-5/8 x 10ft	12ga	50 / PALLET
6SCG27610	2-7/16 x 1-5/8 x 10ft	12ga	30 / PALLET
6SCG31410	3-1/4 x 1-5/8 x 10ft	12ga	20 / PALLET
6SCG15820	1-5/8 x 1-5/8 x 20ft	12ga	25 / PALLET

GREEN POWDER COATED, SHORT SLOT

PART #	SIZE (D x W x L)	GAUGE	QUANTITY / PALLET
6SCGR131610	13/16 x 1-5/8 x 10ft	14ga	50 / PALLET
6SCGR15810	1-5/8 x 1-5/8 x 10ft	12ga	50 / PALLET

304 STAINLESS STEEL, SHORT SLOT

PART #	SIZE (D x W x L)	GAUGE	QUANTITY / PALLET
6SCS2131610	13/16 x 1-5/8 x 10ft	14ga	50 / PALLET
6SCS215810	1-5/8 x 1-5/8 x 10ft	12ga	50 / PALLET
6SCS215820	1-5/8 x 1-5/8 x 20ft	12ga	25 / PALLET

DOUBLE BACK-TO-BACK STRUT, SPOT WELDED, PRE-GALVANIZED, SHORT SLOT

PART #	SIZE (D x W x L)	GAUGE	QUANTITY / PALLET
6SCDB15810	1-5/8 x 1-5/8 (3-1/4 Overall Depth) x 10ft	12ga	25 / PALLET



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BEAM AND COLUMN LOADS

SPAN OR COLUMN (in)	TYPE	MAX LOAD OF COLUMN LOADED @ C.G. (LBS)		STATIC BEAM LOAD (X-X AXIS)							
				ALLOWABLE UNIFORM LOAD @ 25,000 PSI (LBS)		DEFLECTION @ 25,000 PSI (IN)		UNIFORM LOAD @ L/240 (LBS)		UNIFORM LOAD @ L/360 (LBS)	
		SINGLE	DOUBLE BACK	SINGLE	DOUBLE BACK	SINGLE	DOUBLE BACK	SINGLE	DOUBLE BACK	SINGLE	DOUBLE BACK
12		7,109	14,862	3,249	2,610	0.014	0.008	**	**	**	**
18		6,549	14,402	2,166	2,610***	0.031	0.018	**	**	**	**
24		5,938	13,919	1,625	2,610***	0.055	0.032	**	**	**	**
30		5,337	13,473	1,300	2,610***	0.086	0.050	**	**	1,257	**
36		4,771	13,090	1,083	2,610***	0.124	0.072	**	**	873	**
42		4,242	12,771	928	2,610***	0.169	0.099	**	**	641	**
48		3,745	12,511	812	2,374	0.220	0.129	737	**	491	**
60		3,012	11,685	650	1,899	0.344	0.202	471	**	314	1,566
72		2,514	10,078	542	1,582	0.496	0.291	327	**	218	1,087
84		2,136	8,180	464	1,356	0.675	0.396	240	1,199	160	799
96		1,834	6,291	406	1,187	0.882	0.517	184	917	123	611
108		1,585	4,971	361	1,055	1.116	0.655	145	725	97	483
120		*	4,026	325	949	1.378	0.808	117	587	78	391
180		*	*	217	633	3.099	1.819	52	261	35	174
240		*	*	163	474	5.510	3.233	29	147	19	98

* Not recommended - KL/r exceeds 200.

** For these loads, the uniform beam capacity is lower than L/240 or L/360 beam capacity and is therefore the governing restraint.

*** Load limited by spotweld shear.

NOTES:

1. The beam capacities shown above include the weight of the strut beam. The beam weight must be subtracted from these capacities to arrive at the net beam capacity.
2. Allowable beam loads are based on a uniform loaded, simply supported beam. For capacities of a beam loaded at midspan at a single point, multiply the beam capacity by 50% and deflection by 80%.
3. The above chart shows beam capacities for strut without holes. For strut with holes, multiply the following: 7/8" diameter Knockout by 82%, Round Hole 3/4" by 85% and Round Hole 9/16" by 88%, Slotted 9/16" x 1-1/8" by 88%, 13/32" x 3" by 90%.