

INTRODUCTION TO BOXBOLT®

BoxBolt® is a high-strength clamping solution for blind connection applications and Hollow Structural Steel (HSS) members. The clamps provide solutions for joining steel without the need for on-site drilling or welding, giving much more flexibility than traditional methods. The system provides a guaranteed connection every time without the need for on-site verification, providing the installation guidelines are correctly followed.

BoxBolt is a fully tested and approved blind connection solution for connecting to hollow section steel or where access is restricted to one side only. The BoxBolt is suitable for use with rectangular, square and even circular hollow sections. The features a hexagon head design to aid installation with a standard wrench. It allows it to be installed with our unique BoxSok™ installation tool for when installation time needs to be kept to an absolute minimum

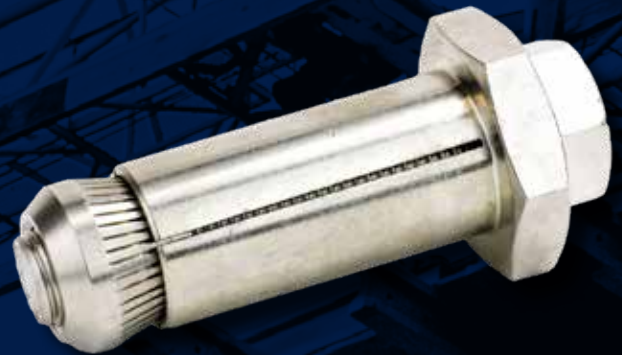
The BoxBolt is available in three finishes; Zinc Plated for the less aggressive environments, Hot Dip Galvanized for the more aggressive environments, and Stainless Steel for the most demanding of applications. These finishes combined with three lengths of BoxBolt make it extremely flexible to suit its environment and application. The BoxBolt is approved for use by Lloyds Register (LR) type approval and the Deutsches Institut für Bautechnik (DIBt) to give the specifier and user total confidence.

FEATURES

- Hot-Dip Galvanized Steel
- Installation requires only basic hand tools
- 5 to 1 Factor of Safety
- High tensile and shear values
- ICC Seismic Approved

BENEFITS

- Long lasting, corrosion-resistant finish
- Ideal for steel applications where access is limited to one side only
- Eliminates need for drilling/tapping, welding, strapping, through-bolting
- Approved for slip-critical connections
- Suitable for rectangular, circular or square tube



BOXBOLT®

BOXBOLT® SIZES & SPECS

* BQ1Z06 is tested at an external test house but is not approved by LR type or DIBt.

Part Number & Description				Dimensional Information							Load Information		
Finish	Product Code	Bolt Dia	Description	Setscrew Length	Clamping Range (X)		Across Flats of Shoulder	"Shoulder Thick-ness	Sleeve Dia	Hole Size Dia	Available Strength (lbs)		Torque (ft lb)
					Min	Max					Tensile	Shear	
Zinc	BQ1Z06*	1/4"	1/4" BoxBolt Size 1	1-3/4"	1/8"	7/8"	11/16"	3/16"	3/8"	7/16"	2,872	4,793	14
	BQ1Z08	5/16"	5/16" BoxBolt Size 1	2"	3/16"	1"	7/8"	1/4"	1/2"	9/16"	5,071	5,917	18
	BQ2Z08	5/16"	5/16" BoxBolt Size 2	2-3/4"	11/16"	1-13/16"	7/8"	1/4"	1/2"	9/16"	5,071	5,917	18
	BQ3Z08	5/16"	5/16" BoxBolt Size 3	3-9/16"	1-3/16"	2-5/8"	7/8"	1/4"	1/2"	9/16"	5,071	5,917	18
	BQ1Z10	3/8"	3/8" BoxBolt Size 1	2"	3/16"	7/8"	15/16"	1/4"	11/16"	3/4"	9,718	10,985	33
	BQ2Z10	3/8"	3/8" BoxBolt Size 2	2-3/4"	11/16"	1-11/16"	15/16"	1/4"	11/16"	3/4"	9,718	10,985	33
	BQ3Z10	3/8"	3/8" BoxBolt Size 3	3-9/16"	1-3/8"	2-1/2"	15/16"	1/4"	11/16"	3/4"	9,718	10,985	33
	BQ1Z12	1/2"	1/2" BoxBolt Size 1	2-3/16"	3/16"	1"	1"	5/16"	3/4"	13/16"	13,015	12,676	59
	BQ2Z12	1/2"	1/2" BoxBolt Size 2	3-1/8"	3/4"	2'	1"	5/16"	3/4"	13/16"	13,015	12,676	59
	BQ3Z12	1/2"	1/2" BoxBolt Size 3	4"	1-9/16"	2-3/4"	1"	5/16"	3/4"	13/16"	13,015	12,676	59
	BQ1Z16	5/8"	5/8" BoxBolt Size 1	3"	3/16"	1-3/8"	1-7/16"	3/8"	1"	1-1/16"	26,199	29,578	140
	BQ2Z16	5/8"	5/8" BoxBolt Size 2	4"	1-3/16"	2-3/8"	1-7/16"	3/8"	1"	1-1/16"	26,199	29,578	140
	BQ3Z16	5/8"	5/8" BoxBolt Size 3	4-3/4"	2-3/16"	3-1/8"	1-7/16"	3/8"	1"	1-1/16"	26,199	29,578	140
	BQ1Z20	3/4"	3/4" BoxBolt Size 1	4"	5/16"	1-5/8"	1-13/16"	7/16"	1-1/4"	1-5/16"	36,932	33,804	221
	BQ2Z20	3/4"	3/4" BoxBolt Size 2	4-3/4"	1-3/8"	2-13/16"	1-13/16"	7/16"	1-1/4"	1-5/16"	36,932	33,804	221
	BQ3Z20	3/4"	3/4" BoxBolt Size 3	6"	2-9/16"	4"	1-13/16"	7/16"	1-1/4"	1-5/16"	36,932	33,804	221
HDG	BQ1G08	5/16"	5/16" BoxBolt Size 1	2"	3/16"	1"	7/8"	1/4"	1/2"	9/16"	5,071	5,917	18
	BQ2G08	5/16"	5/16" BoxBolt Size 2	2-3/4"	11/16"	1-13/16"	7/8"	1/4"	1/2"	9/16"	5,071	5,917	18
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	BQ1G10	3/8"	3/8" BoxBolt Size 1	2"	3/16"	7/8"	15/16"	1/4"	11/16"	3/4"	9,718	10,985	33
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	BQ1G12	1/2"	1/2" BoxBolt Size 1	2-3/16"	3/16"	1"	1"	5/16"	3/4"	13/16"	13,015	12,676	59
	BQ2G12	1/2"	1/2" BoxBolt Size 2	3-1/8"	3/4"	2'	1"	5/16"	3/4"	13/16"	13,015	12,676	59
	BQ3G12	1/2"	1/2" BoxBolt Size 3	4"	1-9/16"	2-3/4"	1"	5/16"	3/4"	13/16"	13,015	12,676	59
	BQ1G16	5/8"	5/8" BoxBolt Size 1	3"	3/16"	1-3/8"	1-7/16"	3/8"	1"	1-1/16"	26,199	29,578	140
	BQ2G16	5/8"	5/8" BoxBolt Size 2	4"	1-3/16"	2-3/8"	1-7/16"	3/8"	1"	1-1/16"	26,199	29,578	140
	BQ3G16	5/8"	5/8" BoxBolt Size 3	4-3/4"	2-3/16"	3-1/8"	1-7/16"	3/8"	1"	1-1/16"	26,199	29,578	140
	BQ1G20	3/4"	3/4" BoxBolt Size 1	4"	5/16"	1-5/8"	1-13/16"	7/16"	1-1/4"	1-5/16"	36,932	33,804	221
	BQ2G20	3/4"	3/4" BoxBolt Size 2	4-3/4"	1-3/8"	2-13/16"	1-13/16"	7/16"	1-1/4"	1-5/16"	36,932	33,804	221
	BQ3G20	3/4"	3/4" BoxBolt Size 3	6"	2-9/16"	4"	1-13/16"	7/16"	1-1/4"	1-5/16"	36,932	33,804	221
	SS	BQ1S08	5/16"	5/16" BoxBolt Size 1	2"	3/16"	1"	7/8"	1/4"	1/2"	9/16"	4,314	6,787
BQ2S08		5/16"	5/16" BoxBolt Size 2	2-3/4"	11/16"	1-13/16"	7/8"	1/4"	1/2"	9/16"	4,314	6,787	18
BQ3S08		5/16"	5/16" BoxBolt Size 3	3-9/16"	1-3/16"	2-5/8"	7/8"	1/4"	1/2"	9/16"	4,314	6,787	18
BQ1S10		3/8"	3/8" BoxBolt Size 1	2"	3/16"	7/8"	15/16"	1/4"	11/16"	3/4"	6,839	12,222	33
BQ2S10		3/8"	3/8" BoxBolt Size 2	2-3/4"	11/16"	1-11/16"	15/16"	1/4"	11/16"	3/4"	6,839	12,222	33
BQ3S10		3/8"	3/8" BoxBolt Size 3	3-9/16"	1-3/8"	2-1/2"	15/16"	1/4"	11/16"	3/4"	6,839	12,222	33
BQ1S12		1/2"	1/2" BoxBolt Size 1	2-3/16"	3/16"	1"	1"	5/16"	3/4"	13/16"	9,945	15,543	59
BQ2S12		1/2"	1/2" BoxBolt Size 2	3-1/8"	3/4"	2'	1"	5/16"	3/4"	13/16"	9,945	15,543	59
BQ3S12		1/2"	1/2" BoxBolt Size 3	4"	1-9/16"	2-3/4"	1"	5/16"	3/4"	13/16"	9,945	15,543	59
BQ1S16		5/8"	5/8" BoxBolt Size 1	3"	3/16"	1-3/8"	1-7/16"	3/8"	1"	1-1/16"	18,523	28,191	140
BQ2S16		5/8"	5/8" BoxBolt Size 2	4"	1-3/16"	2-3/8"	1-7/16"	3/8"	1"	1-1/16"	18,523	28,191	140
BQ3S16		5/8"	5/8" BoxBolt Size 3	4-3/4"	2-3/16"	3-1/8"	1-7/16"	3/8"	1"	1-1/16"	18,523	28,191	140
BQ1S20		3/4"	3/4" BoxBolt Size 1	4"	5/16"	1-5/8"	1-13/16"	7/16"	1-1/4"	1-5/16"	28,909	47,203	221
BQ2S20		3/4"	3/4" BoxBolt Size 2	4-3/4"	1-3/8"	2-13/16"	1-13/16"	7/16"	1-1/4"	1-5/16"	28,909	47,203	221
BQ3S20		3/4"	3/4" BoxBolt Size 3	6"	2-9/16"	4"	1-13/16"	7/16"	1-1/4"	1-5/16"	28,909	47,203	221

ICC APPROVED BOXBOLT (TYPE C)

The Type C BoxBolt is engineered for Hollow Structural Section (HSS) to Structural Steel connections with static dominant lateral loads in slip-critical conditions, and where static dominant loads are combined and assigned with any Seismic Design Category (A-F).

The Type C BoxBolt has a slightly modified design in order to resist seismic loads and are assembled with four components: a core bolt, body, shoulder, and cone. Type C BoxBolt is available in Hot Dip Galvanized finish.



FEATURES & BENEFITS

- Mild steel to BS EN 10083 Grade 1.1151
- Hot Dip Galvanized to BS EN ISO 1461
- ICC ESR-3217
- Acceptance Criteria - AC437
- ICC approved

BoxBolt® TypeC Blind Fastener Dimensional and Install Information

Product Code	Part Number & Description		Dimensional Information							Install Info.	
			Core Bolt Length	Clamping Range (X)		Across Flats of Shoulder	Collar Thickness	Dim A	Dim B	Dim C Drill Data	Torque (ft lb)
	BoxBolt® (Core Bolt Diameter)	Description		min	max						
BQ1GAL12C	5/16" (12mm)	1/2" BoxBolt Size 1	2-3 16" (55mm)	1/2"	5/16	1" (26mm)	5/16" (8.4mm)	2-1/16" (52mm)	1-1/8"	13/16"	60
BQ2GAL12C	5/16" (12mm)	1/2" BoxBolt Size 2	3-1/8" (80mm)	3/4"	1-7/8"	1" (26mm)	5/16" (8.4mm)	2-1/16" (52mm)	1-1/8"	13/16"	60
BQ3GAL12C	5/16" (12mm)	1/2" BoxBolt Size 3	4" (100mm)	1-1/2"	2-11/18"	1" (26mm)	5/16" (8.4mm)	2-1/16" (52mm)	1-1/8"	13/16"	60
BQ1GAL16C	3/8" (16mm)	5/8" BoxBolt Size 1	3" (75mm)	5/8"	1-3/8"	1-7/16" (36mm)	3/8" (9.4mm)	2-11/16" (68mm)	1-3/8"	1-1/16"	140
BQ2GAL16C	3/8" (16mm)	5/8" BoxBolt Size 2	4" (91mm)	1"	2-5/16"	1-7/16" (36mm)	3/8" (9.4mm)	2-11/16" (68mm)	1-3/8"	1-1/16"	140
BQ3GAL16C	3/8" (16mm)	5/8" BoxBolt Size 3	4-3/4" (100mm)	2"	3-1/16"	1-7/16" (36mm)	3/8" (9.4mm)	2-11/16" (68mm)	1-3/8"	1-1/16"	140
BQ1GAL20C	1/2" (20mm)	3/4" BoxBolt Size 1	4" (100mm)	3/4"	1-13/16"	1-13/16" (46mm)	7/16" (11.4mm)	3-7/16" (87mm)	1-3/4"	1-3/8"	220
BQ2GAL20C	1/2" (20mm)	3/4" BoxBolt Size 2	5-1/8" (130mm)	1-5/16"	3"	1-13/16" (46mm)	7/16" (11.4mm)	3-7/16" (87mm)	1-3/4"	1-3/8"	220
BQ3GAL20C	1/2" (20mm)	3/4" BoxBolt Size 3	6" (150mm)	2-9/16"	4"	1-13/16" (46mm)	7/16" (11.4mm)	3-7/16" (87mm)	1-3/4"	1-3/8"	220

BoxBolt® TypeC Blind Fastener Strength Information

Part Code	LRFD Strengths (lbf)						ASD Strengths (lbf)					
	Static Dominant Loads			Seismic SDC D, E, or F			Static Dominant Loads			Seismic SDC D, E, or F		
	Shear-Bearing	Shear-Slip Resistance	Tension	Shear-Bearing	Shear-Slip Resistance	Tension	Shear-Bearing	Shear-Slip Resistance	Tension	Shear-Bearing	Shear-Slip Resistance	Tension
BQ1GAL12C	7,680	150	5,250	6,900	150	4,730	4,800	90	3,280	4,320	100	2,960
BQ2GAL12C	7,680	150	5,250	6,900	150	4,730	4,800	90	3,280	4,320	100	2,960
BQ3GAL12C	7,680	150	5,250	6,900	150	4,730	4,800	90	3,280	4,320	100	2,960
BQ1GAL16C	12,200	150	13,100	11,000	170	11,400	7,650	110	8,230	6,870	110	7,120
BQ2GAL16C	12,200	170	13,100	11,000	170	11,400	7,650	110	8,230	6,870	110	7,120
BQ3GAL16C	12,200	170	13,100	11,000	170	11,400	7,650	110	8,230	6,870	110	7,120
BQ1GAL20C	17,600	170	15,000	11,800	790	13,500	11,000	490	9,400	7,380	500	8,470
BQ2GAL20C	17,600	790	15,000	11,800	790	13,500	11,000	490	9,400	7,380	500	8,470
BQ3GAL20C	17,600	790	15,000	11,800	790	13,500	11,000	490	9,400	7,380	500	8,470

BOXSOK™ RAPID ASSEMBLY TOOL

The BoxSok™ Installation Tool is a rapid, unique assembly tool for the BoxBolt. This specially designed socket holds the hexagon shoulder on the body to stop rotating while allowing the inner socket to tighten up the core bolt. The core bolt draws the cone up inside the slotted body of the sleeve and expands the individual fins inside the connection.

The BoxSok™ eliminates the need for two tools to install the BoxBolt; this considerably speeds up the installation process and also reduces the risk of trapping hands between two tools. The BoxSok™ device is available to suit all BoxBolt diameters.

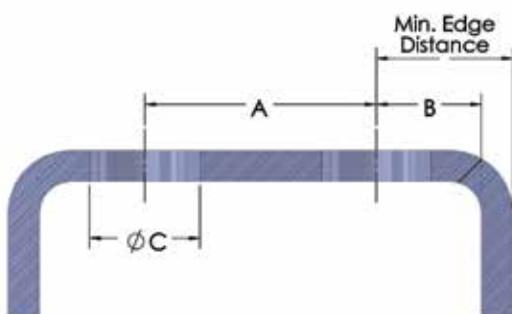
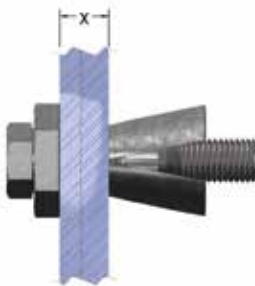


Size	Overall Length	Body Length	Body Diameter	Drive Size
M06	4-5/16"	3-3/8"	1-3/16"	1/4"
M08	4-7/16"	3-3/8"	1-5/16"	3/8"
M10	4-7/16"	3-3/8"	1-1/2"	3/8"
M12	4-1/2"	3-7/16"	1-5/8"	3/8"
M16	4-1/2"	3-7/16"	1-15/16"	1/2"
M20	4-9/16"	3-1/2"	2-5/16"	1/2"



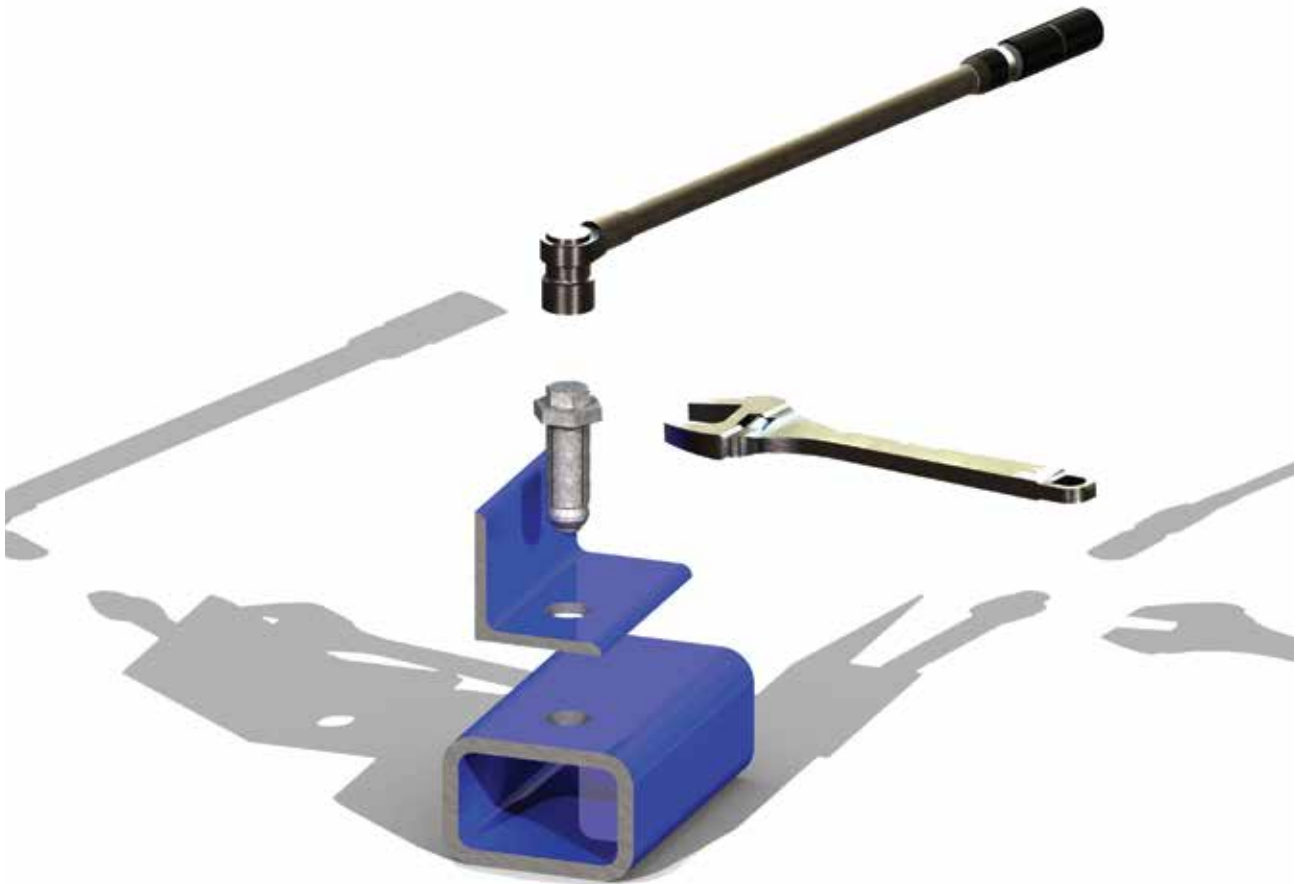
BOXSOK™ BOXBOLT INSTALLATION CONSIDERATIONS

BoxBolts must be installed in pre-drilled holes in the sections to be connected. The holes must have the correct diameter, spacing, and edge distance according to the chart below. The pre-drilled holes must be standard diameter holes conforming to AISC 360, where the bolt hole diameter is no greater than the Body diameter plus 1/16th of an inch. Burrs in the holes must be removed prior to installation.

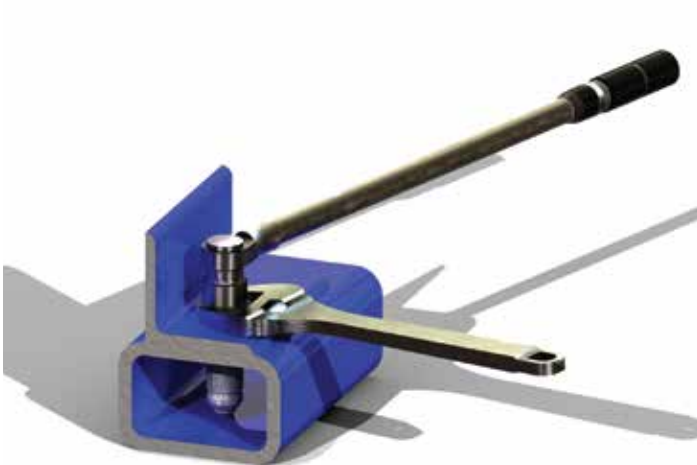


Hole Dimensions & Positioning			
Box Bolt Size	Dim A	Dim B	Dim C
1/4"	1-3/16"	7/16"	7/16"
5/16"	1-3/8"	1/2"	9/16"
3/8"	1-9/16"	9/16"	3/4"
1/2"	2"	13/16"	13/16"
5/8"	2-3/16"	13/16"	1-1/16"
3/4"	2-3/4"	1"	1-5/16"

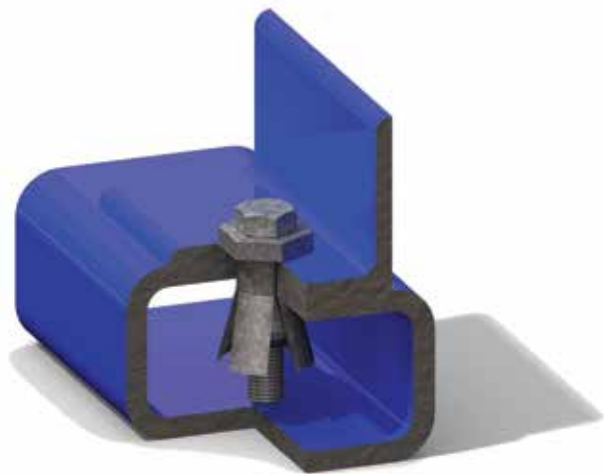
Minimum edge distance = Dim B + the thickness of hollow section

BOXBOLT® INSTALLATION INSTRUCTIONS

STEP 1: Align the holes in the bracket to be secured with the pre-drilled hole in the structural tube. Insert the BoxBolt through both pieces of steel until the underside of the shoulder is flush with the outside of the steel.



STEP 2: Hold the hexagon shoulder of the BoxBolt with an open ended wrench. Use an impact wrench or ratchet to tighten the core bolt.



STEP 3: Remove the open ended wrench and check to ensure that the core bolt is tightened to the recommended torque.

BOXBOLT® APPLICATION EXAMPLES

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