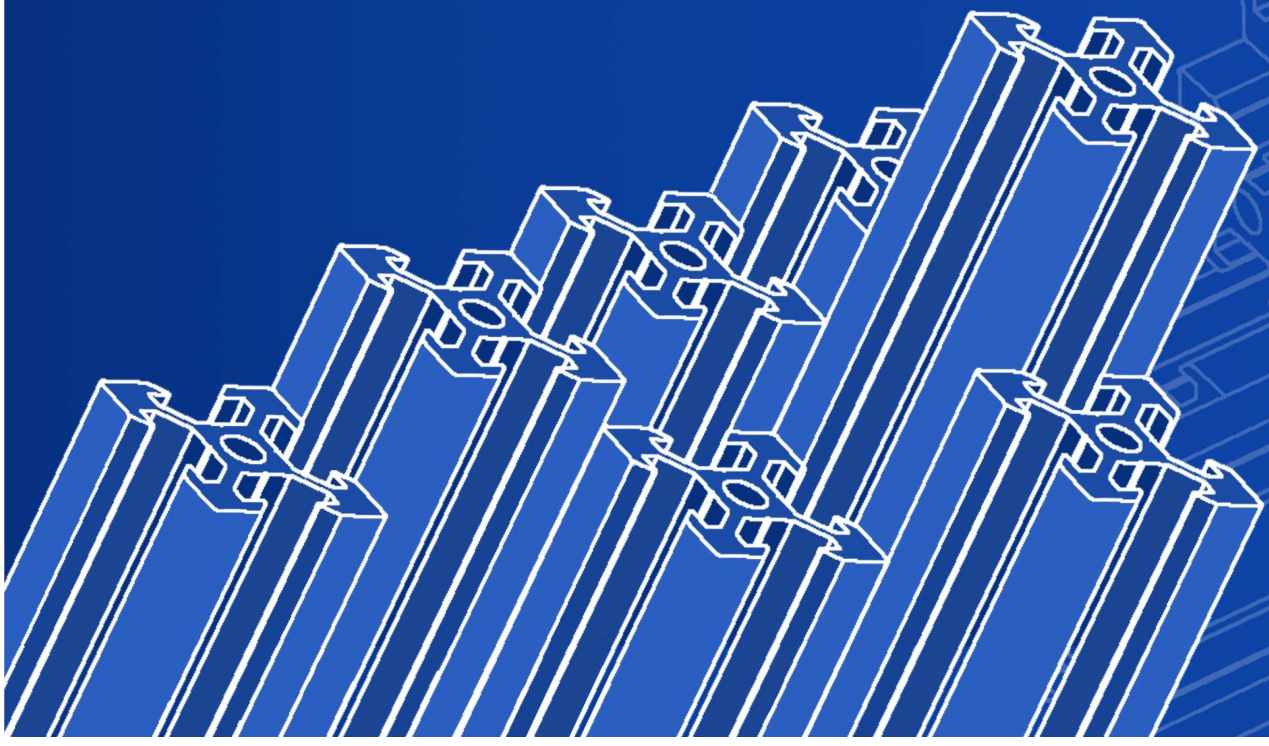
Maker Store

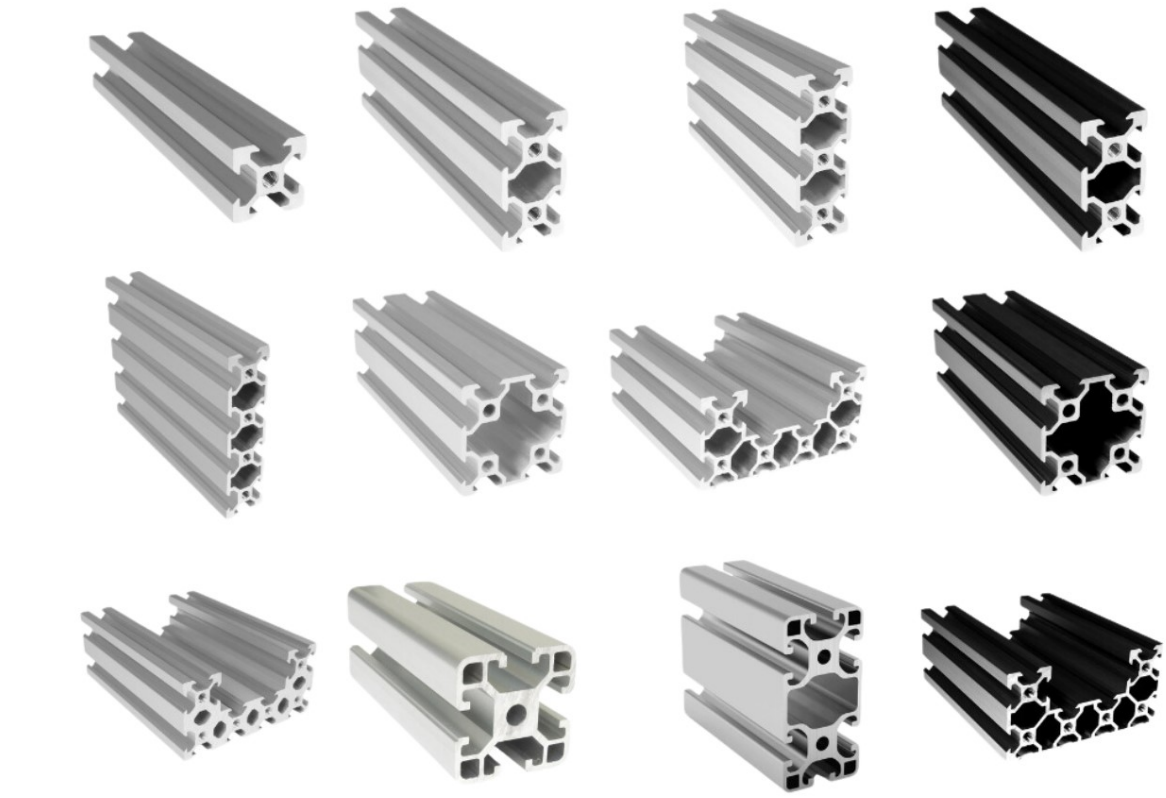
Product Catalogue

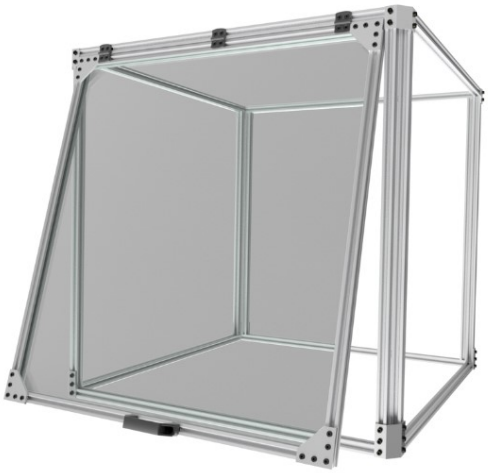
2024

Aluminium Extrusions

Discover our premium selection of aluminium V-Slot and T-Slot extrusion profiles. Inside this catalogue, you'll find comprehensive details on specifications, sizes,material properties, applications, and more.







Standards and Basic Information

At Maker Store, we offer a wide range of high-quality aluminum extrusions, designed to meet the diverse needs of makers, DIY enthusiasts, and professionals alike.
The extrusions are divided into two series: 20 Series and 40 Series extrusions based on the profile dimensions.

These extrusions are made from Aluminium 6063-T5

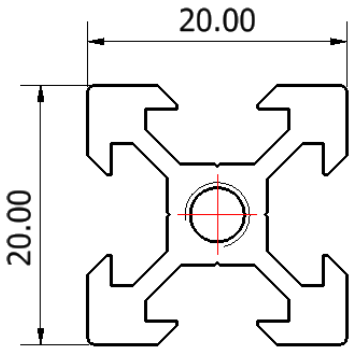
Properties of Al 6063-T5:

Density	2.7 g/cm^3
Modulus of Elasticity	68.9 GPa
Yield Strength	145 MPa
Ultimate Tensile Strength	186 MPa
Elongation at Break	12%
Hardness, Brinell	60

Hardness, Vickers	70
Poisson's Ratio	0.33
Fatigue Strength	68.9 MPa
Shear Modulus	25.8 GPa
Shear Strength	117 MPa
Thermal Conductivity	209 W/m-K

Series Profile Overview

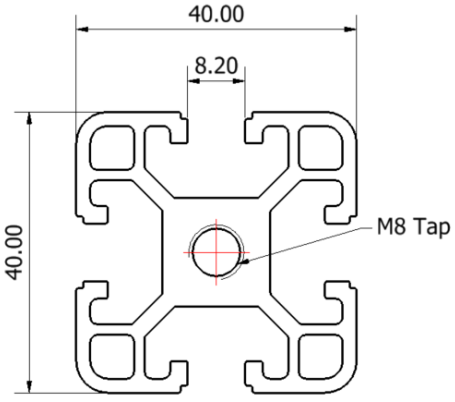
20 Series (V-Slot)



Application Examples:

Light-duty frames, 3D Printers, CNC Machines, cabinets, test set-ups, jigs, machine tables, etc.

40 Series (T-Slot)



Application Examples:

Moderate to Heavy-duty frames, industrial work stations, enclosures, machine tables, CNC Machines

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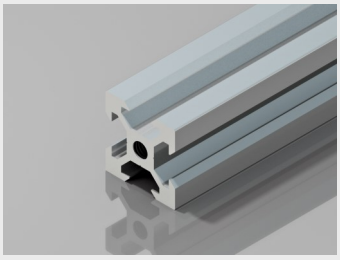
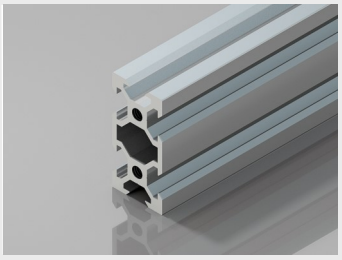
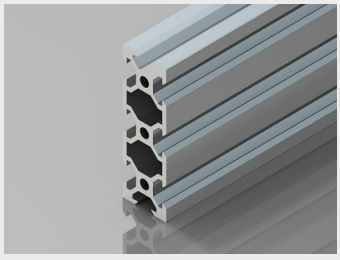
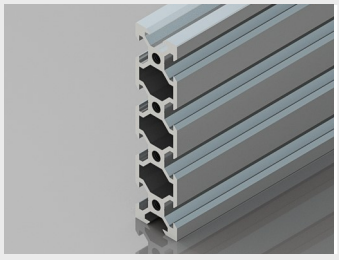
Standards and Basic Information

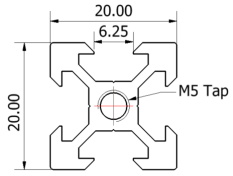
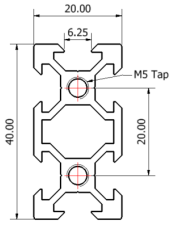
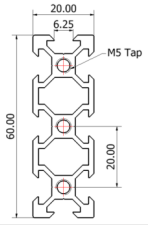
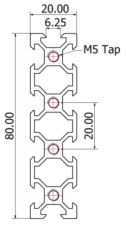
The V-Slot Linear Rail is an advanced aluminum extrusion designed to provide precise linear motion for a wide range of applications. Constructed from high-quality aluminum alloy (6063 - T5), this rail offers exceptional strength and durability, ensuring reliable performance even under heavy loads.

One of the key advantages of the V-Slot Linear Rail is its adjustability. The rail is modular, allowing for easy addition or removal of components, as well as adjustments to the rail's length. This feature makes it simple to create multi-axis systems or customize the rail to fit unique project specifications.

Series Profile Overview

20x20 mm	20x40 mm	20x60 mm	20x80 mm
			

Cross-section Dimensions (mm)

Standard Lengths

500 mm 1000 mm 1500 mm 3050 mm	280 mm 500 mm 1000 mm 1500 mm 3000 mm	280 mm 500 mm 1000 mm 1500 mm 3000 mm	250 mm 500 mm 1000 mm 1500 mm 3000 mm

Finish

Clear Anodised, Black Anodised

Application Examples

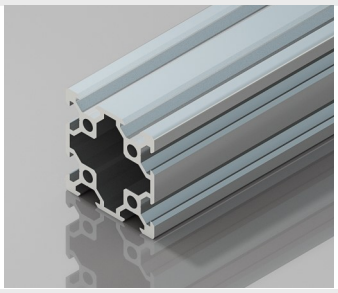
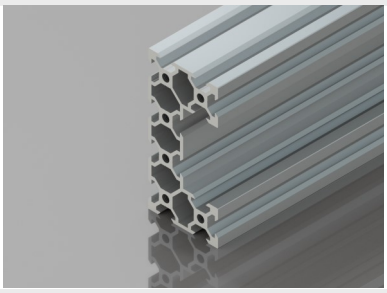
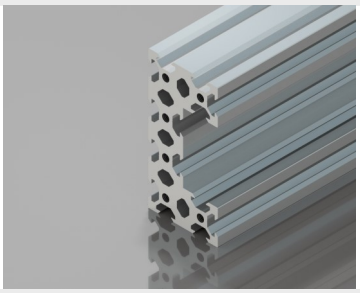
3D Printers CNC Machines Sliders and Gimbals	Machine Frames Workstations and Benches Customized Enclosures	Heavy-Duty Storages Systems Industrial Testing Equipment Heavy-Duty Machine Frames	Large Scale 3D Printers Industrial Shelves Industrial Welding Stations

Standards and Basic Information

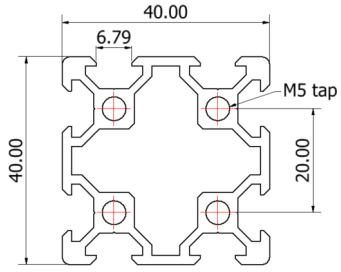
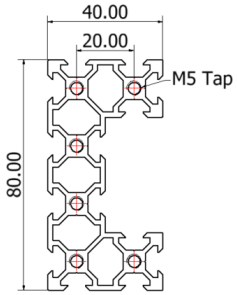
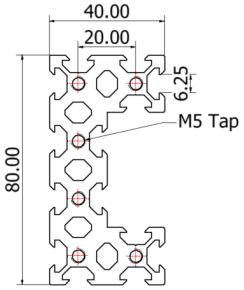
V-Slot Linear Rails adhere to industry standards, ensuring compatibility with diverse components and systems. The 20 Series V-Slot Linear Rails are known for their reliability and ease of integration, making them suitable for applications in automation, 3D printing, CNC machining, and more.

Their lightweight and durable aluminum construction further contributes to their widespread use in various industries. Whether for prototyping or production-grade projects, these linear rails offer a dependable foundation for achieving smooth and accurate linear motion.

Series Profile Overview

40x40 mm	C-Beam	C-Beam HEAVY
		

Cross-section Dimensions (mm)

Standard Lengths

1000 mm 1500 mm 3000 mm	250 mm 500 mm 1000 mm 1500 mm 3000 mm	1000 mm 1500 mm 3000 mm

Finish

Clear Anodised, Black Anodised

Application Examples

CNC Machines	Industrial Automation	High-Load Linear Motion Systems
3D Printers	Material handling Systems	Large Scale CNC Machines
CNC Routers	Machine Tool Accessories	Industrial robotics

V-Slot 20 x 20 mm

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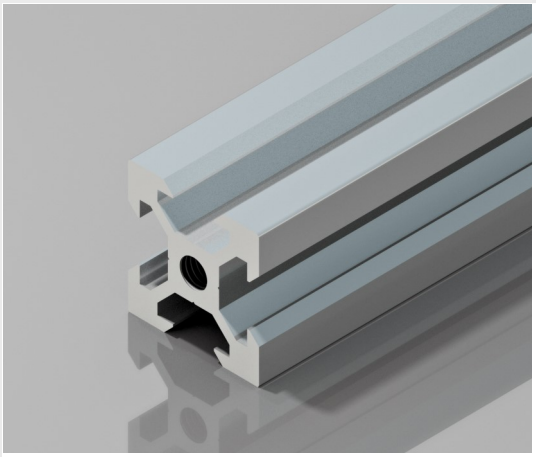


The 20x20 mm V-Slot is designed with four V-shaped grooves along its 20mm frame, allowing effortless compatibility with V-wheels, bearings, and various accessories for versatile applications.

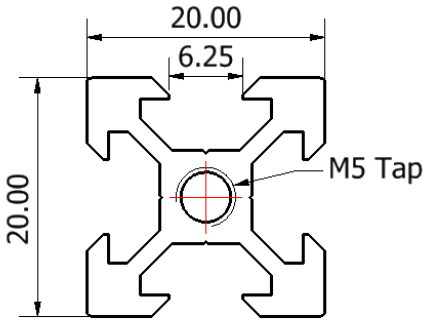
www.makerstore.com.au/product/v-slot-20-x-20mm/

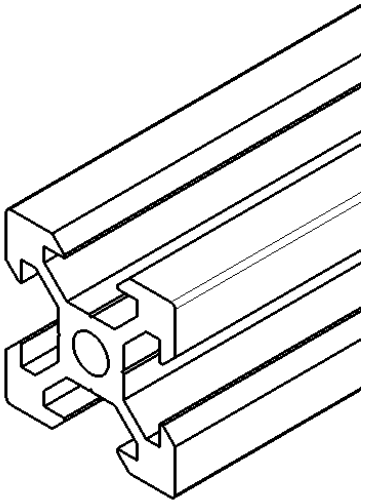
Specifications

Standard Lengths (mm)	Weight (Kg/m)	Dimensions (mm)	Estimated Area (mm^2)	Moment of Inertia (mm^4)
500, 1000, 1500, 3050	0.4627	20 x 20	171.403	I_x = 6988.349 I_y = 6988.349

** Custom lengths available*

Part Number (Colour): LR-2020-S (Silver), LR-2020-B (Black)





Commonly Used Hardware

20 SERIES COMPATIBLE

90 degree Angle Corner Connector (V-Slot)

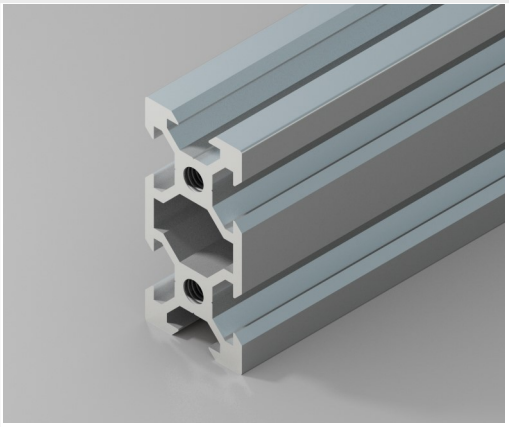
M5 Button Head Screws

M5 Sliding T-Nut

To see more compatible hardware, check www.makerstore.com.au/product-category/v-slot/20s-hardware/

V-Slot 20 x 40 mm

Maker Store



The 20x40 mm V-Slot has six open V shaped grooves with a smooth finish. This allows the extrusion to be resistant to dirt and debris while being easy to clean.

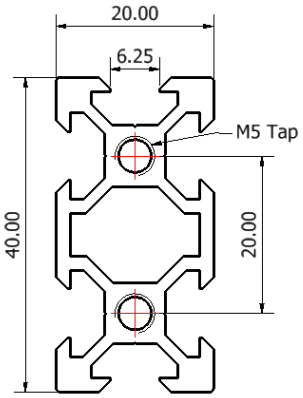
Specifications

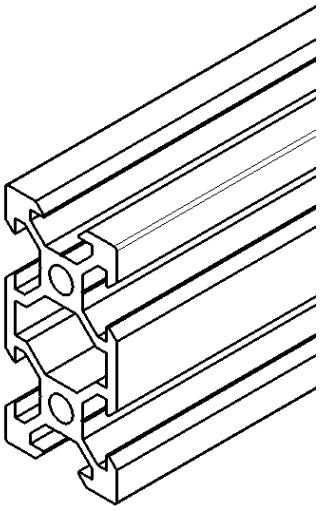
Standard Lengths (mm)	Weight (Kg/m)	Dimensions (mm)	Estimated Area (mm^2)	Moment of Inertia (mm^4)
280, 500,1000 1500, 3000	0.8099	20 x 40	299.989	I_x = 48163.289 I_y = 12305.195

www.makerstore.com.au/product/v-slot-20-x-40mm/

** Custom lengths available*

Part Number (Colour): LR-2040-S (Silver), LR-2040-B (Black)





Commonly Used Hardware

20 SERIES COMPATIBLE

In-Out Corner Bracket - 40mm

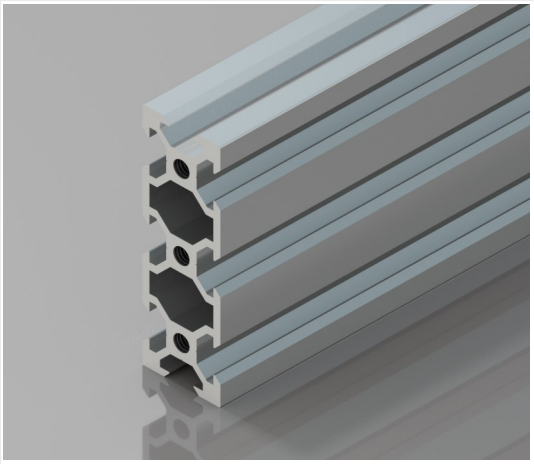
Metal Hinge 20 Series

Drop In Tee Nut

To see more compatible hardware, check www.makerstore.com.au/product-category/v-slot/20s-hardware/

V-Slot 20 x 60 mm

Maker Store



The 20x60 mm V-Slot has eight open V shaped grooves with a smooth finish. This allows the extrusion to be resistant to dirt and debris while being easy to clean.

1

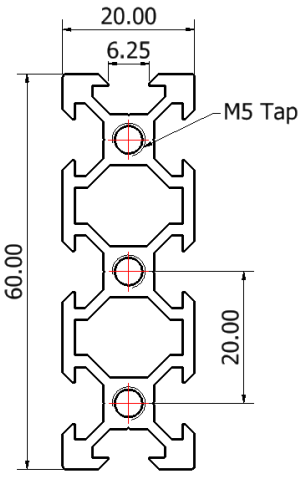
Specifications

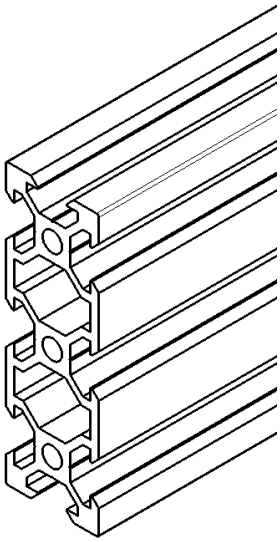
Standard Lengths (mm)	Weight (Kg/m)	Dimensions (mm)	Estimated Area (mm^2)	Moment of Inertia (mm^4)
280, 500, 1000, 1500, 3000	1.1572	20 x 60	428.576	I_x = 149336.119 I_y = 17622.040

www.makerstore.com.au/product/v-slot-20-x-60mm/

** Custom lengths available*

Part Number (Colour): LR-2060-S (Sliver), LR-2060-B (Black)





Commonly Used Hardware

20 SERIES COMPATIBLE

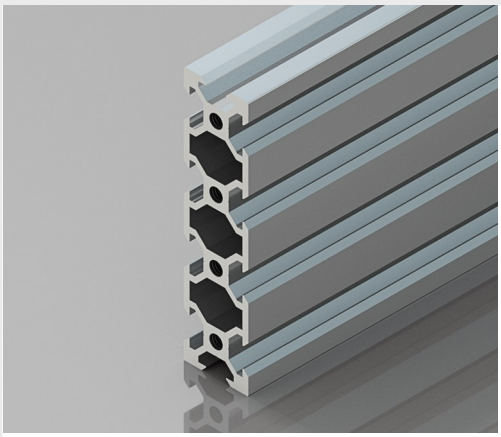
In-Out Corner Bracket - 60mm

Universal L Brackets - Triple

Spring Loaded Tee Nut

To see more compatible hardware, check www.makerstore.com.au/product-category/v-slot/20s-hardware/

V-Slot 20 x 80 mm



The 20x80 mm V-Slot boasts ten open V-shaped grooves, offering versatility and strength. It's perfect for crafting rigid linear guide systems, machine frames, and more.

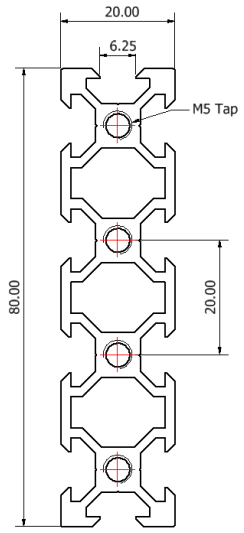
Specifications

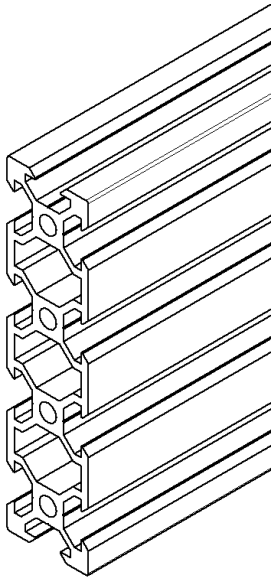
Standard Lengths (mm)	Weight (Kg/m)	Dimensions (mm)	Estimated Area (mm^2)	Moment of Inertia (mm^4)
250, 500, 1000, 1500, 3000	1.5043	20 x 80	557.163	I_x = 336224.147 I_y = 22938.885

www.makerstore.com.au/product/v-slot-20-x-80mm/

** Custom lengths available*

Part Number (Colour): LR-2080-S (Silver), LR-2080-B (Black)





Commonly Used Hardware

20 SERIES COMPATIBLE

In-Out Corner Bracket - 80mm

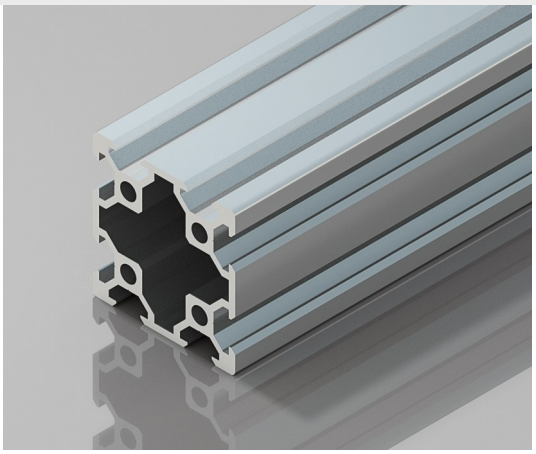
40x80 L Plate / Bracket

Wheel Block

To see more compatible hardware, check www.makerstore.com.au/product-category/v-slot/20s-hardware/

V-Slot 40 x 40 mm

Maker Store



The 40x40 mm V-Slot has eight open V shaped grooves with a smooth finish, two on each side of its 40 mm frame. This V-Slot can be used to build rigid machine frames and linear motion systems.

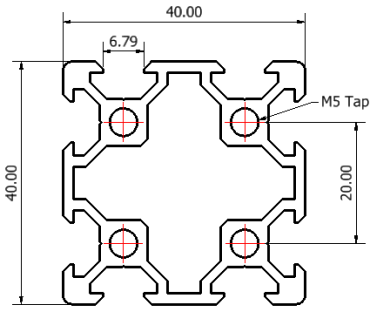
Specifications

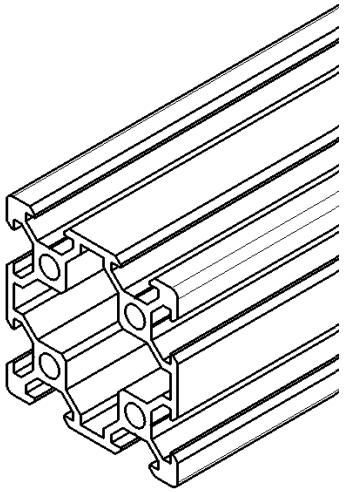
Standard Lengths (mm)	Weight (Kg/m)	Dimensions (mm)	Estimated Area (mm^2)	Moment of Inertia (mm^4)
1000, 1500, 3000	1.2378	40 x 40	458.463	I_x = 81407.580 I_y = 81407.580

www.makerstore.com.au/product/v-slot-40-x-40mm/

** Custom lengths available*

Part Number (Colour): LR-4040-S (Silver), LR-4040-B (Black)





Commonly Used Hardware

20 SERIES COMPATIBLE

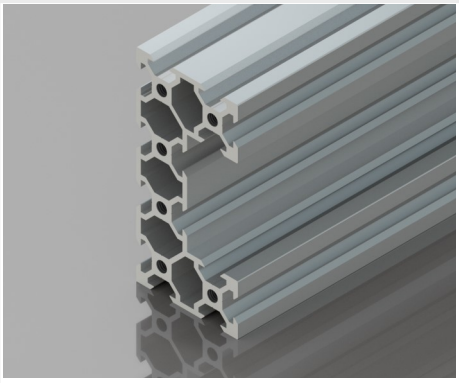
45° Angle Joining Plate

Pivot Joint - 20mm

Panel Mounting Bracket - 20Series

To see more compatible hardware, check www.makerstore.com.au/product-category/v-slot/20s-hardware/

V-Slot C-Beam



The 40x80 mm V-Slot also called C-Beam because of its C-Shaped profile, is a high-quality extruded aluminium profile building block that has an extremely smooth linear V groove rail on all 4 sides.

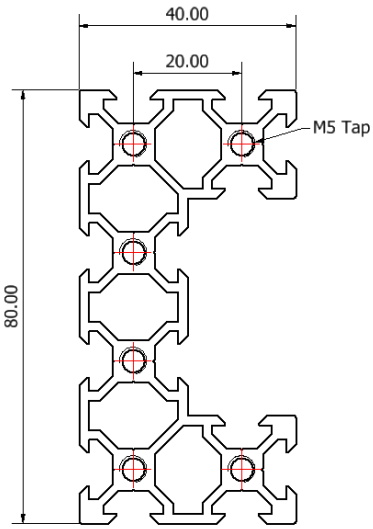
Specifications

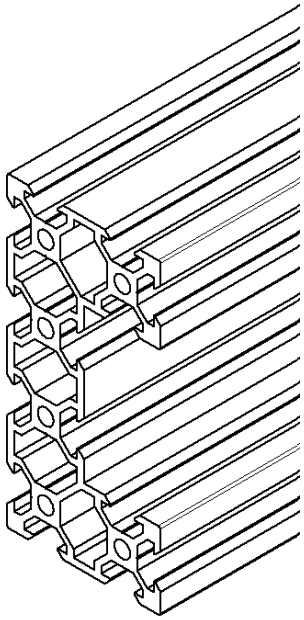
Standard Lengths (mm)	Weight (Kg/m)	Dimensions (mm)	Estimated Area (mm^2)	Moment of Inertia (mm^4)
250, 500, 1000, 1500, 3000	2.1576	40 x 80	799.125	I_x = 565646.842 I_y = 117760.927

www.makerstore.com.au/product/c-beam/

** Custom lengths available*

Part Number (Colour): LR-C-S (Silver), LR-C-B (Black)





Commonly Used Hardware

20 SERIES COMPATIBLE

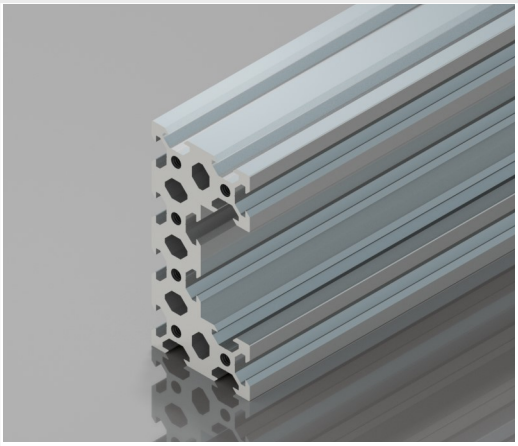
40x40 L Plate / Bracket

Universal L Brackets - Double

Double Tee Nut

To see more compatible hardware, check www.makerstore.com.au/product-category/v-slot/20s-hardware/

V-Slot C-Beam HEAVY



Maker Store's enhanced C-Beam profile is 2.7x thicker than the standard version, perfect for robust applications like CNC machines and heavy-duty actuators. It's stronger and more durable, ideal for demanding uses.

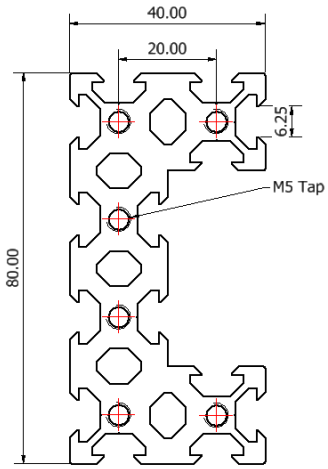
Specifications

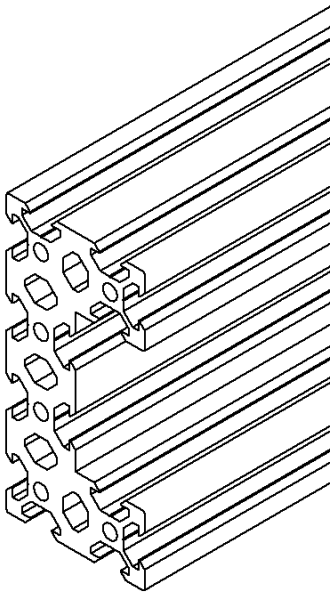
Standard Lengths (mm)	Weight (Kg/m)	Dimensions (mm)	Estimated Area (mm^2)	Moment of Inertia (mm^4)
1000, 1500, 3000	3.5431	40 x 80	1312.404	I_x = 844908.198 I_y = 145566.530

www.makerstore.com.au/product/lr-chv-s/

** Custom lengths available*

Part Number (Colour): LR-CHV-S (Silver), LR-CHV-B (Black)



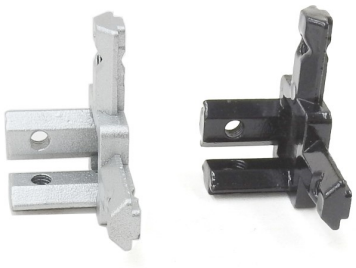


Commonly Used Hardware

20 SERIES COMPATIBLE

Curved Joining L Plate

Universal L Bracket



3 - Way Corner Bracket

To see more compatible hardware, check www.makerstore.com.au/product-category/v-slot/20s-hardware/

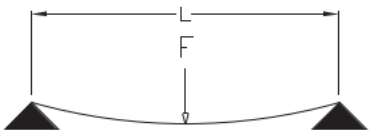
Deflection Calculations

Maker Store

Using the formulas below, calculate the approximate deflection in millimeters (mm) for any extrusion under different loading scenarios.

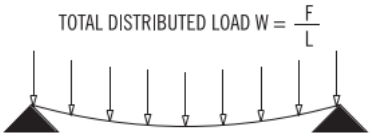
Load Scenario 1: Extrusion resting on two supports (Simply supported)

Concentrated Load at Center



Maximum Deflection = $\frac{FL^3}{48EI}$

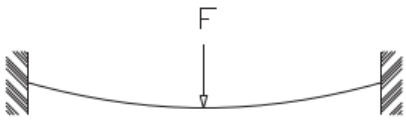
Uniformly Distributed Load



Maximum Deflection = $\left(\frac{5}{384}\right)\frac{(WL^4)}{EI}$

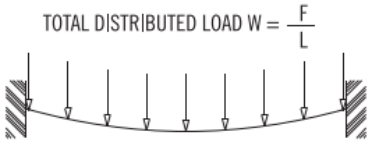
Load Scenario 2: Extrusion clamped at both ends (Fixed constraint)

Concentrated Load at Center



Maximum Deflection = $\frac{FL^3}{192EI}$

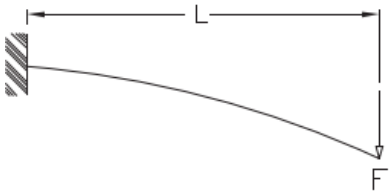
Uniformly Distributed Load



Maximum Deflection = $\frac{WL^4}{384EI}$

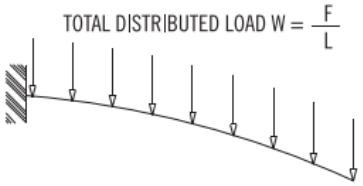
Load Scenario 3: Extrusion clamped at one end (Cantilever loading)

Concentrated Load at Free End



Maximum Deflection = $\frac{FL^3}{3EI}$

Uniformly Distributed Load



Maximum Deflection = $\frac{WL^4}{8EI}$

Equation Variable Units Respectively

Maximum Deflection - (mm)
F - Force (N)
L - Length (mm)
E - Modulus of elasticity (N/mm^2)
I - Moment of Inertia (mm^4)
W - Weight (N/mm)

For specifications, see next page

Specifications

Maker Store

Use the specifications below to calculate deflection in the extrusion using the formulas listed on Page 11

EXTRUSION	MODULUS OF ELASTICITY (E)	MOMENT OF INERTIA (I_X)	MOMENT OF INERTIA (I_Y)
LR-2020-S	68900 N/mm^2	6988.349 mm^4	6988.349 mm^4
LR-2040-S	68900 N/mm^2	48163.289 mm^4	12305.195 mm^4
LR-2060-S	68900 N/mm^2	149336.119 mm^4	17622.040 mm^4
LR-2080-S	68900 N/mm^2	336224.147 mm^4	22938.885 mm^4
LR-4040-S	68900 N/mm^2	81407.580 mm^4	81407.580 mm^4
LR-C-S	68900 N/mm^2	565646.842 mm^4	117760.927 mm^4
LR-CHV-S	68900 N/mm^2	844908.198 mm^4	145566.530 mm^4

Check our online Extrusion Deflection Calculator using the link below, to calculate deflection in any extrusion for a specified loading and support condition.

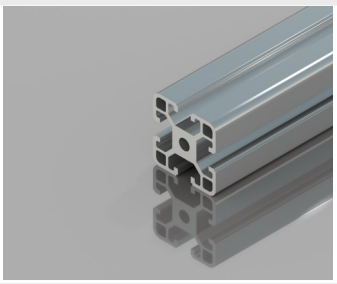
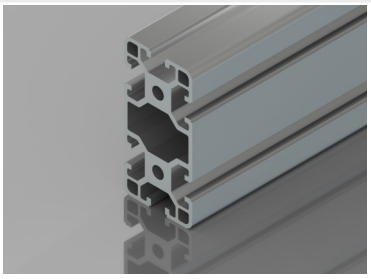
www.makerhardware.net/deflection_calculator/

Standards and Basic Information

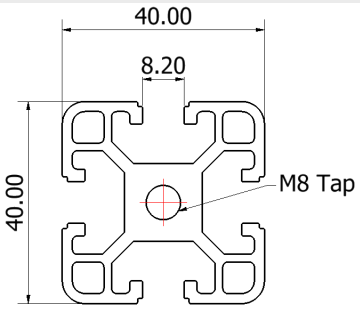
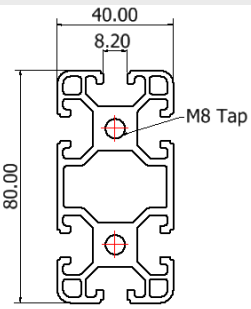
40 Series T-Slot extrusions are versatile components used in various industries, offering a robust framework for diverse structures. They provide strength, flexibility, and easy assembly, making them ideal building blocks for projects.

The T-shaped slot along the profile allows simple insertion of T-nuts, bolts, and fasteners, ensuring easy and secure component connection without welding or extensive machining. This key feature distinguishes T-Slot extrusions as efficient and user-friendly structural solutions.

Series Profile Overview

40x40 mm HEAVY Duty	40x80 mm HEAVY Duty
	

Cross-section Dimensions (mm)

Standard Lengths

1000 mm 1500 mm 2000 mm 3050 mm	1000 mm 1500 mm 2000 mm 3050 mm

Finish

Clear Anodised

Application Examples

Industrial Workstations Machine frames Safety Guarding	Heavy-Duty Machinery Frames Structural Supports High-Load Assemblies

T-Slot 40 x 40 mm – HEAVY Duty

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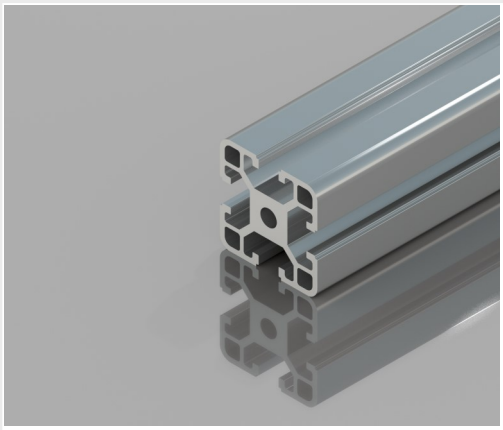


The T-Slot 40 x 40 mm - HEAVY Duty extrusion is a robust upgrade, with thicker walls for added strength. Engineered with a 40mm by 40mm cross-section, designed to endure heavy loads, providing a durable framework for industrial and commercial projects.

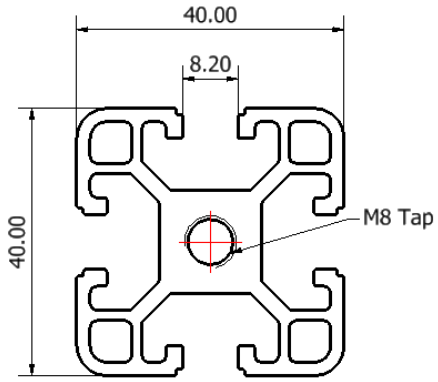
www.makerstore.com.au/product/lr-40-8-4040-s/

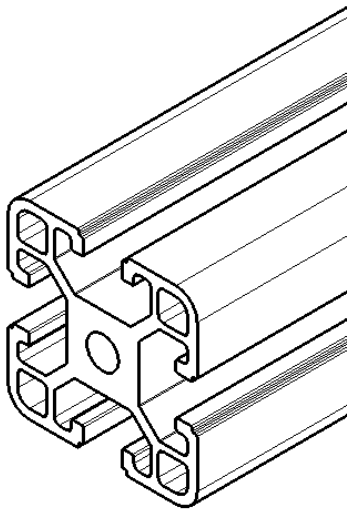
Specifications

Standard Lengths (mm)	Weight (Kg/m)	Dimensions (mm)	Estimated Area (mm^2)	Moment of Inertia (mm^4)
1000, 1500, 2000, 3050	1.64	40 x 40	607.278	I_x = 86540.568 I_y = 86540.568

** Custom lengths available*

Part Number (Colour): LR-40-8-4040-S (Silver)





Commonly Used Hardware

40 SERIES COMPATIBLE

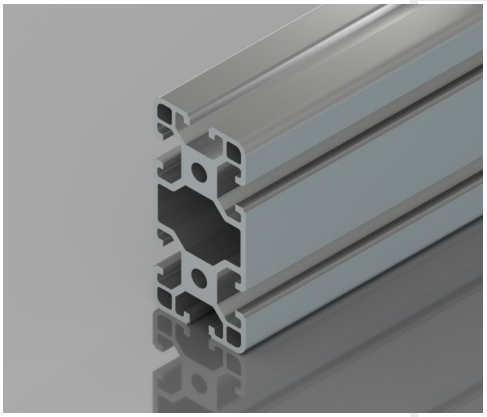
2 - Hole Gusset Corner Bracket - 40 Series

45 Degree Support Connector Bracket - 40 Series

40 Series Drop-In T Nuts

To see more compatible hardware, check www.makerstore.com.au/product-category/t-slot-40-extrusion/40s-hardware/

T-Slot 40 x 80 mm – HEAVY Duty



The T-Slot 40 x 80 mm - HEAVY Duty is a stronger version of the 40 x 80 mm T-Slot extrusion, with thicker walls. Engineered for heavy-duty equipment and industrial structures needing robust load-bearing capabilities.

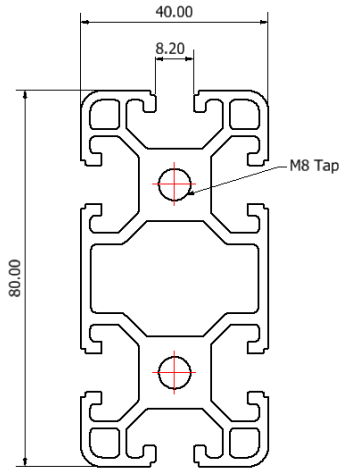
Specifications

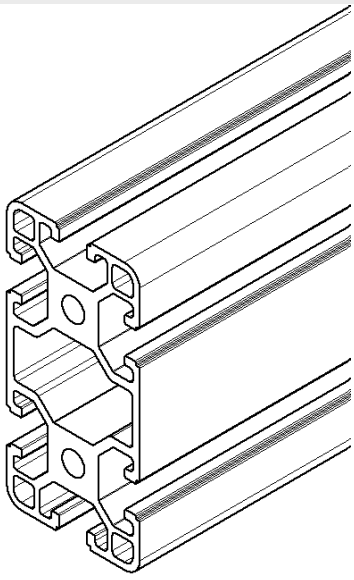
Standard Lengths	Weight (Kg/m)	Dimensions (mm)	Estimated Area (mm^2)	Moment of Inertia (mm^4)
1000, 1500, 2000, 3050	2.941	40 x 80	1089.083	I_x = 659173.977 I_y = 164841.666

www.makerstore.com.au/product/lr-40-8-4080-s/

** Custom lengths available*

Part Number (Colour): LR-40-8-4080-S (Silver)





Commonly Used Hardware

40 SERIES COMPATIBLE

4x4 Hole Gusset Corner Bracket - 40 Series

6 Hole Aluminium Hinge 62x60 - 40 Series

40 Series Sliding T-Nuts

To see more compatible hardware, check www.makerstore.com.au/product-category/t-slot-40-extrusion/40s-hardware/

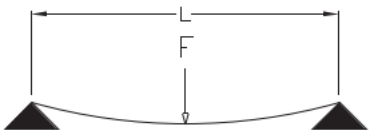
Deflection Calculations

Maker Store

Using the formulas below, calculate the approximate deflection in millimeters (mm) for any extrusion under different loading scenarios.

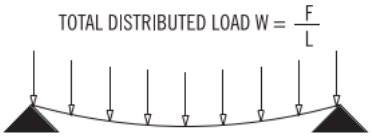
Load Scenario 1: Extrusion resting on two supports (Simply supported)

Concentrated Load at Center



Maximum Deflection = $\frac{FL^3}{48EI}$

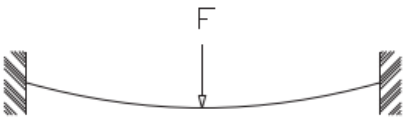
Uniformly Distributed Load



Maximum Deflection = $\left(\frac{5}{384}\right)\frac{(WL^4)}{EI}$

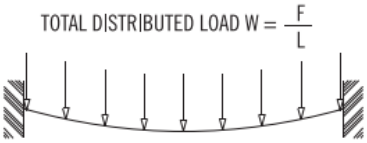
Load Scenario 2: Extrusion clamped at both ends (Fixed constraint)

Concentrated Load at Center



Maximum Deflection = $\frac{FL^3}{192EI}$

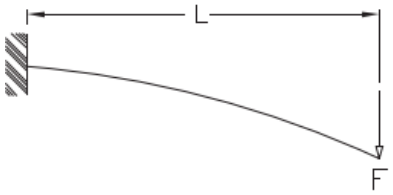
Uniformly Distributed Load



Maximum Deflection = $\frac{WL^4}{384EI}$

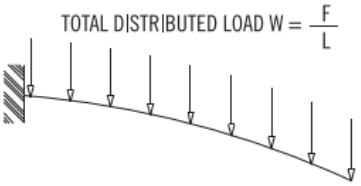
Load Scenario 3: Extrusion clamped at one end (Cantilever loading)

Concentrated Load at Free End



Maximum Deflection = $\frac{FL^3}{3EI}$

Uniformly Distributed Load



Maximum Deflection = $\frac{WL^4}{8EI}$

Equation Variable Units Respectively

Maximum Deflection - (mm)
F - Force (N)
L - Length (mm)
E - Modulus of elasticity (N/mm^2)
I - Moment of Inertia (mm^4)
W - Weight (N/mm)

For specifications, see next page

Use the specifications below to calculate deflection in the extrusion using the formulas listed on Page 16

EXTRUSION	MODULUS OF ELASTICITY (E)	MOMENT OF INERTIA (I_X)	MOMENT OF INERTIA (I_Y)
LR-40-8-4040-S	68900 N/mm^2	86540.568 mm^4	86540.568 mm^4
LR-40-8-4080-S	68900 N/mm^2	659173.977 mm^4	164841.666 mm^4

Check our online Extrusion Deflection Calculator using the link below, to calculate deflection in any extrusion for a specified loading and support condition.

www.makerhardware.net/deflection_calculator/

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