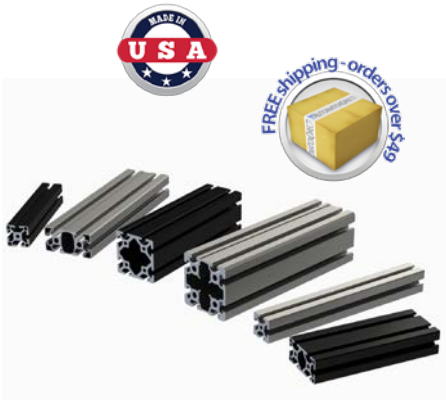
Sure frame® Aluminum T-Slotted Rail

10 Series Fractional T-Slotted Aluminum Rail

SureFrame™ T-slotted aluminum rails are extruded exclusively for AutomationDirect, with features, quality, and performance you expect. SureFrame T-slotted rails are compatible with other popular brands.

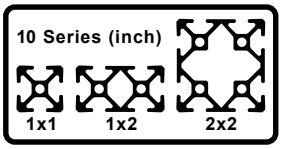
- Cut to length in 0.001 inch increments
- Minimum cut length: 6"
- Maximum cut length: 90"
- Cut accuracy: +/- 0.006"
- Corrosion and UV resistant

Properties	
Material	Aluminum 6063-T6
Finish	Clear or Black Anodize
Hardness	Webster Model B 11-12
Straightness	0.0125 inch/ft [1.042 mm/m]
Twist	0.25°/ft [0.25°/305mm]

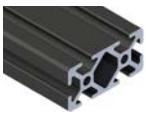


10 Series (inch)

Slot Size 6 — Core Hole Ø 0.20"

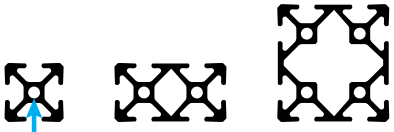


T-Slot Drop Lock feature improves connection strength and vibration resistance

Part Number	*Part Image*	*Price per inch*	*Profile Size*	*Weight Class*	*Weight lbs/ft [kg/m]*	*Moment of Inertia Lx (in⁴ [cm⁴])*	*Moment of Inertia Ly (in⁴ [cm⁴])*	*Drawing Link*
1010C		$0.28	1 x 1in	Standard	0.529 [0.787]	0.045 [1.872]	0.045 [1.872]	PDF
1010B		$0.40						PDF
1020C		$0.47	1 x 2in		0.952 [1.417]	0.084 [3.494]	0.308 [12.813]	PDF
1020B		$0.66						PDF
2020C		$0.70	2 x 2in		1.482 [2.205]	0.543 [22.589]	0.543 [22.589]	PDF
2020B		$0.99						PDF

Extruded T-slotted rails have a thru Core Hole feature that can be used to attach various components to the end of the profile using:

- Self-tapping / thread-forming screws (no tapping needed)
- A tap to thread the core hole for a threaded fastener



Core Hole — 2 Places — 4 Places

Please Note: Prices on aluminum are closely tied to the market price. This allows us to offer the best savings possible if conditions are favorable; however, it also means that our prices may increase if market conditions warrant.

Aluminum T-Slotted Rail

Deflection Calculations

Using the calculations below, find your approximate deflection* for a specific extrusion.
See table below for variations.

As always when calculating, use diligence and work only in either imperial or metric units at one time.

Aluminum 6063-T6 Properties	
Yield Strength	29,007 psi [200 MPa]
Tensile Strength	33,359 psi [230 MPa]
Modulus of Elasticity	10,000,000 psi [68.9 GPa]

"E" = Modulus of Elasticity

"F" = Force

"I" = Moment of Inertia

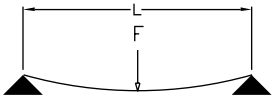
"L" = Length

"W" = Weight

***for reference only**

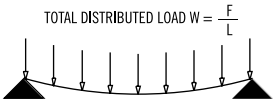
Supported Loads

CONCENTRATED LOAD AT CENTER (simply supported)



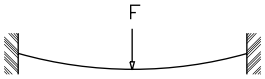
$$\text{MAX DEFLECTION} = \frac{FL^3}{48\,EI}$$

UNIFORMLY DISTRIBUTED LOAD (simply supported)



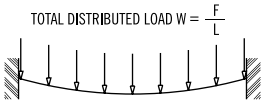
$$\text{MAX DEFLECTION} = \frac{5}{84}\,\frac{WL^4}{EI}$$

CONCENTRATED LOAD AT CENTER (between fixed supports)



$$\text{MAX DEFLECTION} = \frac{FL^3}{192\,EI}$$

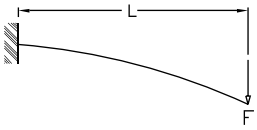
UNIFORMLY DISTRIBUTED LOAD (between fixed supports)



$$\text{MAX DEFLECTION} = \frac{WL^4}{384\,EI}$$

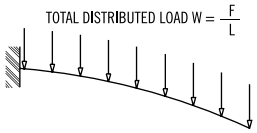
Cantilever Loads

CONCENTRATED LOAD AT CENTER (simply supported)



$$\text{MAX DEFLECTION} = \frac{FL^3}{3\,EI}$$

UNIFORMLY DISTRIBUTED LOAD (simply supported)

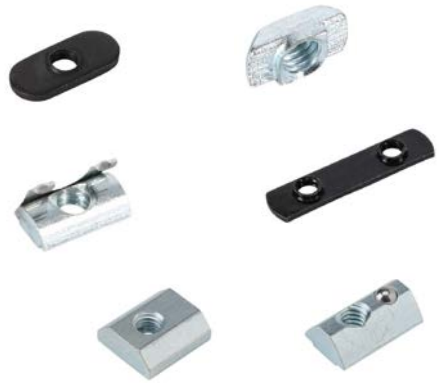


$$\text{MAX DEFLECTION} = \frac{WL^4}{8\,EI}$$

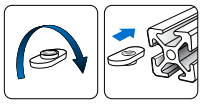
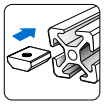
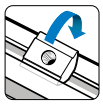
FATH® T-Slotted Rail Accessories

T-Slot Nuts

- Designed to fit into the T-slot cavity of extruded aluminum rails.
- Hammer nuts provide safe electrostatic discharging (ESD) connection.
- No machining required.
- Material: zinc plated steel

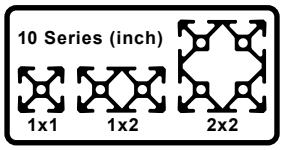


T-Slot Nuts Selection

Part Image	Nut Type	Installation	Holds Position Without Screw	ESD Connection
	Double Economy T-Nut		No	No
	Economy T-Nut			
	Hammer Nut			Yes
	Slide-In Nut			No
	Roll-In Nut with Leaf Spring		Yes	
	Roll-In Nut with Spring Loaded Ball			

10 Series T-Slot Nuts

Fits Slot Size 6



Part Number	Part Image	Price	Nut Type	Thread Size	Pack Quantity	Drawing Link
161113		$13.00	Roll-In Nut	8-32 UNF	10	PDF
161124		$9.50	Hammer Nut			PDF
161112		$13.00	Roll-In Nut	10-32 UNF		PDF
151038		$11.00	Hammer Nut	10-32 UNF		PDF
148804		$4.00	Double Economy T-Nut	1/4-20 UNC	4	PDF
151037		$5.50	Economy T-Nut		10	PDF
151039		$15.00	Roll-In Nut			PDF

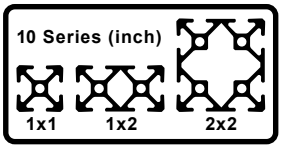
FATH® T-Slotted Rail Accessories

Fasteners

- Choose from 4 Head types in numerous lengths
- Hex socket head
- Select desired T-Slot nut style with corresponding thread size.
- Material: Black zinc plated or bright zinc plated steel, prevents corrosion better than typical black oxide coatings

10 Series Fasteners

Fits Slot Size 6



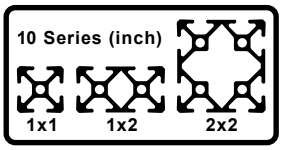
Part Number	Part Image	Price	Thread	Screw Length	Head Type	Color	Pack Quantity	Drawing Link
162994		$8.00	#8-32 UNF	3/8 in	Button head socket cap screw	Flat black	10	PDF
161073		$7.75		1/2 in	Flat head socket cap screw			PDF
162993		$7.50	#10-32 UNF	3/8 in	Button head socket cap screw			PDF
162995		$7.75		1/2 in	Socket head cap screw			PDF
161046		$4.75			Button head socket cap screw			PDF
161047		$5.00		5/8 in				PDF
161048		$5.75		3/4 in				PDF
161074		$6.25	1/4-20 UNC	1/2 in	Flat head socket cap screw			PDF
151040		$4.25			Button head socket cap screw			PDF
151041		$5.25			Flanged button head socket cap screw	Gloss black		PDF
161049		$4.75		9/16 in	Button head socket cap screw	Flat black		PDF
161075		$6.25		5/8 in	Flat head socket cap screw			PDF
161050		$4.75			Button head socket cap screw			PDF
161087		$4.00			Socket head cap screw			PDF

FATH® T-Slotted Rail Accessories

Fasteners - Continued

10 Series Fasteners

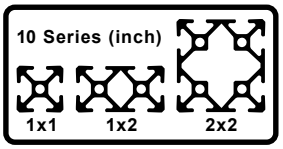
Fits Slot Size 6



Part Number	Part Image	Price	Thread	Screw Length	Head Type	Color	Pack Quantity	Drawing Link
161051		$4.75	1/4-20 UNC	3/4 in	Button head socket cap screw	Flat black	10	PDF
161052		$5.25	1/4-20 UNC	1in				PDF

10 Series Self Forming / Tapping Screw

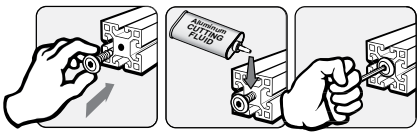
Fits 10 Series Core Hole



Works with Aluminum with hole diameter 0.197" - 0.216" [5.0 - 5.5 mm]

Part Number	Part Image	Price	Thread	Screw Length	Head Type	Color	Pack Quantity	Drawing Link
161103		$8.75	S6	16mm	Self-Tapping Screw Button head socket cap T-25 Torx	Bright zinc	10	PDF

Self Forming / Tapping Screw Installation



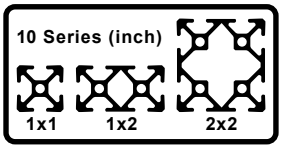
FATH® T-Slotted Rail Accessories

Connecting Components

- Connects two or three T-slot rails together
- Recommended ADC Fastener based on part feature, slot depth and core hole
- Material: varies by part

10 Series Connecting Components

Fits Slot Size 6



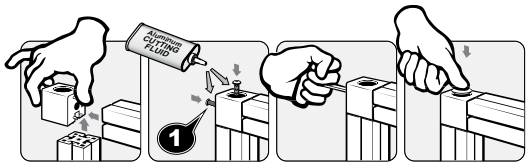
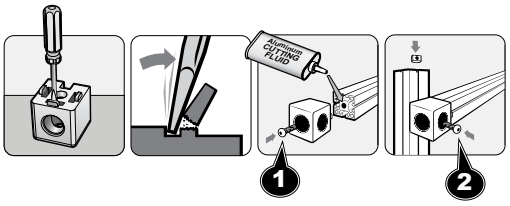
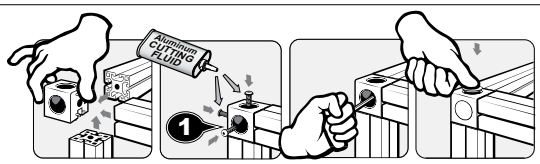
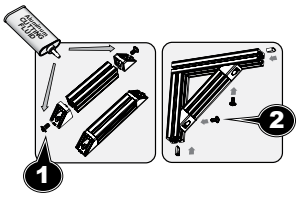
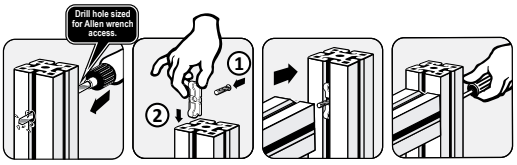
Part Number	Part Image	Price	Description	Fits Profile	Material	Recommended Screw Fastener (ADC Part Number) Core Hole Attachment ❶	*T-Slot Attachment ❷	Pack Quantity	Drawing Link
148953		$8.75	2d Cube Connector	1 x 1in	Die-cast aluminum	Fasteners Included (161103)	Socket Head Cap Screw 1/4-20 x 7/16" **	1	PDF
166230		$10.00							PDF
148956		$10.50	3d Cube Connector				n/a		PDF
166231		$12.00							PDF
151042		$4.50	Angle Connector				Fasteners Included (151040 & 151039)		PDF
166232		$5.00							PDF
151043		$8.00		1 x 2in					PDF
166233		$8.50							PDF
163007		$10.50	Screw Connector	1 x 1in	Zinc plated steel	Designer's choice	n/a	10	PDF

*T-Slot Nut also required.

** Recommended fastener not available from AutomationDirect.com

FATH® T-Slotted Rail Accessories

Connecting Components - Continued

Connecting Components Installation	
Core Hole Installation	***T-Slot Installation***
2D Cube Connector	
	
3D Cube Connector	
	n/a
Angle Connector	
	
Screw Connector	
	

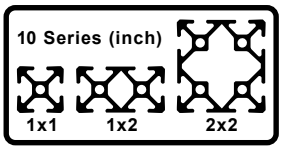
FATH® T-Slotted Rail Accessories

Joining Plates

- Connects two or more T-slot rails together
- Recommended ADC Fastener based on plate thickness and slot depth
- Material: Anodized aluminum

10 Series Joining Plates

Fits Slot Size 6



Part Number	Part Image	Price	Description	Recommended Screw Fastener *T-Slot Attachment (ADC Part Number)	Pack Quantity	Drawing Link
151044		$2.50	Straight Flat Plate	151040 or 151041	1	PDF
151044-10		$24.00			10	
166234		$3.00			1	PDF
151045		$3.75				PDF
166235		$4.00				PDF
151046		$4.50				PDF
166236		$5.00				PDF
151047		$4.25				PDF
166237		$5.00				PDF
151048		$6.50	Rectangular Flat Plate			PDF
166238		$7.00				PDF
151049		$5.50				PDF
166239		$6.00				PDF
151050		$6.25	Flat Plate			PDF
166240		$7.00				PDF

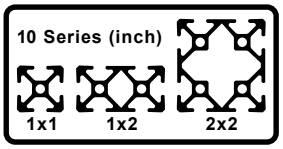
*T-Slot Nut also required

FATH® T-Slotted Rail Accessories

Joining Plates - Continued

10 Series Joining Plates - Cont'd

Fits Slot Size 6



Part Number	Part Image	Price	Description	Recommended Screw Fastener *T-Slot Attachment (ADC Part Number)	Pack Quantity	Drawing Link
151051		$6.50	Flat Plate	151040 or 151041	1	PDF
151051-10		$62.00			10	
166241		$7.00			1	PDF
151052		$6.50	T-Shaped Flat Plate			PDF
166242		$7.00				PDF
151053		$7.25				PDF
166243		$8.00				PDF
151054		$10.50				PDF
166244		$12.00				PDF
151055		$9.50	Cross Flat Plate			PDF
166245		$11.00				PDF
151056		$8.00	L-Shaped Flat Plate			PDF
151056-10		$75.00			10	
166246		$9.00			1	PDF
151057		$10.50	T-Shaped Flat Plate			PDF
166247		$12.00				PDF

*T-Slot Nut also required

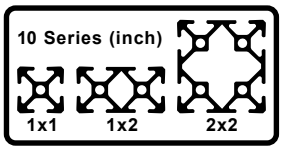
FATH® T-Slotted Rail Accessories

Brackets

- Connects two T-slot rails together at a 90° angle
- Recommended ADC Fastener based on part features and slot depth
- Material: varies by part

10 Series Brackets

Fits Slot Size 6



Part Number	Part Image	Price	Description	Recommended Screw Fastener (ADC Part Number) Core Hole Attachment ❶	Recommended Screw Fastener (ADC Part Number) *T-Slot Attachment ❷	Pack Quantity	Material	Drawing Link
148915		$1.50	Angle Bracket	n/a	162994	1	Die-cast aluminum	PDF
148915-10		$11.50				10		
166249		$1.50				1		PDF
151059		$4.00			162993		Die-cast zinc	PDF
151059-10		$38.00				10		
166250		$4.00				1		PDF
151058		$2.50	Inside Corner Bracket		151040		Anodized aluminum	PDF
151058-10		$24.00				10		
166248		$3.00				1		PDF
151061		$4.75	Tall Inside Corner Bracket					PDF
151061-10		$45.00				10		
166252		$5.00				1		PDF
151060		$4.75	Wide Inside Corner Bracket					PDF
166251		$5.00						PDF
151062		$6.75	Inside Corner Bracket					PDF
151062-10		$65.00				10		
166253		$8.00				1		PDF

***T-Slot Nut also required.**

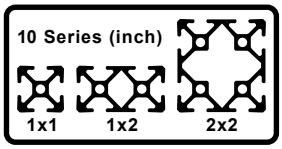
**** Recommended fastener not available from AutomationDirect.com**

FATH® T-Slotted Rail Accessories

Brackets - Continued

10 Series Brackets - Cont'd

Fits Slot Size 6



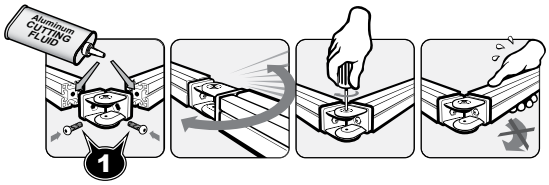
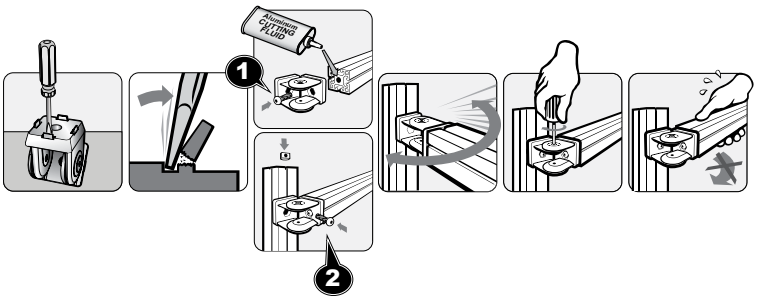
Part Number	Part Image	Price	Description	Recommended Screw Fastener (ADC Part Number) Core Hole Attachment 1	Recommended Screw Fastener (ADC Part Number) *T-Slot Attachment 2	Pack Quantity	Material	Drawing Link
151063		$3.00	Gusseted Inside Corner Bracket	n/a	151040	1	Anodized aluminum	PDF
151063-10		$26.00				10		PDF
166254		$3.00				1		PDF
151064		$5.25	Tall Gusseted Inside Corner Bracket					PDF
166255		$6.00						PDF
151065		$5.75	Wide Gusseted Inside Corner Bracket					PDF
166256		$6.00						PDF
151066		$10.50	Gusseted Inside Corner Bracket					PDF
166257		$12.00						PDF
151067		$30.50	Pivot Joint	161103	161049		Die-cast zinc	PDF
166258		$36.00						PDF
148932		$39.50	Pivot Joint With Locking Handle					PDF
166259		$47.00						PDF

*T-Slot Nut also required.

** Recommended fastener not available from AutomationDirect.com

FATH® T-Slotted Rail Accessories

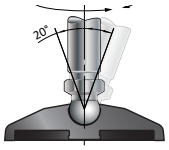
Brackets - Continued

Brackets Installation	
Core Hole Installation	***T-Slot Installation***
Pivot Joint	
	

FATH® T-Slotted Rail Accessories

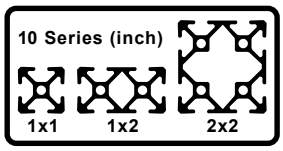
Bases

- Recommended ADC Fastener based on part features and extrusion core hole
- Material: varies by part



10 Series Bases

Fits Slot Size 6



Part Number	Part Image	Price	Diameter	Description	Fits	Load Rating kg [lb]	Recommended Screw Fastener (ADC Part Number) Core Hole Attachment 1	Recommended Screw Fastener (ADC Part Number) T-Slot Attachment 2	Pack Quantity	Material	Drawing Link
118356		$16.00	n/a	1/4-20 UNC Transport/Base Plate	1 x 2in	n/a	161103 (2) included with kit	n/a	1	Die-cast zinc	PDF
146399		$16.00		3/8-16 UNC Transport/Base Plate							PDF
151074		$7.25		1/4-20 UNC x 1-1/2in Swivel Foot Threaded Rod with 15 mm ball	Transport/ Base Plate 118356	210 [463]*	n/a			Zinc plated steel	PDF
151075		$4.50		3/8-16 UNC x 1-1/2in Swivel Foot Threaded Rod with 15 mm ball	Transport/ Base Plate 146399	470 [1036]*				Zinc plated steel	PDF
151068		$4.00	1.57 in [39.0 mm]	Swivel Base With Anti-Slip Plate	Any 15mm ball Threaded Rod	900 [1984]				Nylon	PDF
151071		$9.50				3000 [6614]				Die-cast zinc	PDF
151072		$17.00	3.11 in [79.0 mm]								PDF
151073		$17.00									PDF
151069		$6.00				900 [1984]				Nylon	PDF
151070		$6.00									PDF
151255		$10.00	3.90 in [99.0 mm]			900 [1984]					PDF
151256		$10.00									PDF

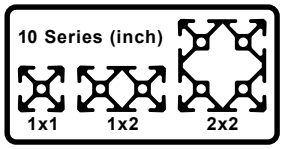
***Based on installation with Transport / Base Plate**
Load rating of a swivel foot assembly is based on the part with the lowest load rating, typically the threaded rod.
Example:
Threaded rod load rating = 210kg [463lb]
Swivel base load rating = 3000kg [6614lb]
Swivel foot assembly load rating = 210kg [463lb]

FATH® T-Slotted Rail Accessories

Bases - Continued

10 Series Bases - continued

Fits Slot Size 6

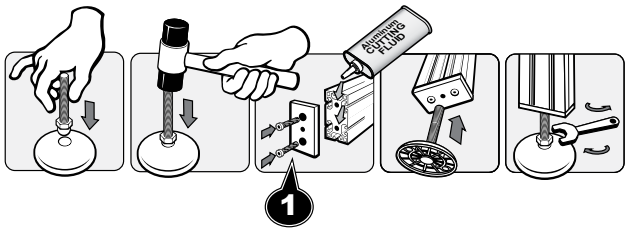


Part Number	Part Image	Price	Diameter	Description	Fits	Load Rating kg [lb]	Recommended Screw Fastener (ADC Part Number) Core Hole Attachment 1	Recommended Screw Fastener (ADC Part Number) **T-Slot Attachment 2	Pack Quantity	Material	Drawing Link
151257		$24.00	3.90 in [99.0 mm]	Swivel Base With Anti-Slip Plate	Any 15mm ball Threaded Rod	3500 [7716]	n/a	n/a	1	Die-cast zinc	PDF
151258		$24.00									PDF
162933		$12.50	See Drawing Link	Extended Swivel Base	Any 15mm ball Threaded Rod	1000 [2204]				Nylon	PDF
162934		$27.00				3000 [6613]				Die-cast zinc	PDF
162955		$10.00	n/a	Floor Bracket	1 x 1in, 1 x 2in, 2 x 2in	n/a		151040		Anodized aluminum	PDF

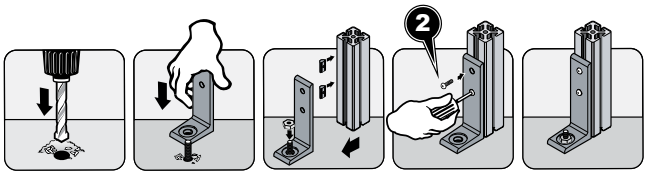
***Based on installation with Transport / Base Plate**
Load rating of a swivel foot assembly is based on the part with the lowest load rating, typically the threaded rod.
Example:
Threaded rod load rating = 210kg [463lb]
Swivel base load rating = 3000kg [6614lb]
Swivel foot assembly load rating = 210kg [463lb]
****T-Slot nut also required**

Bases Installation

Swivel Foot



Floor Bracket



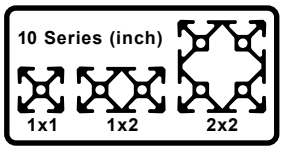
FATH® T-Slotted Rail Accessories

Casters

- Recommended ADC Fastener based on part feature and attachment type
- Material: varies by part

10 Series Casters

Fits Slot Size 6

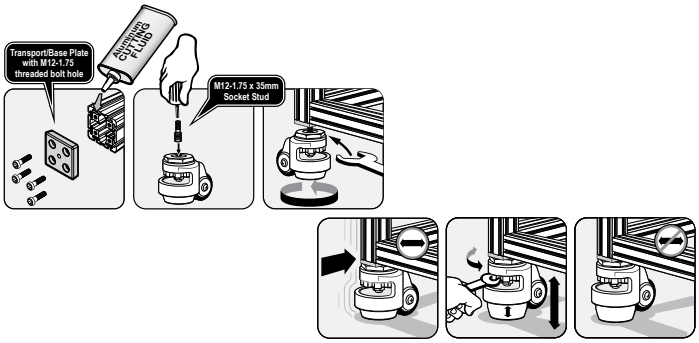


Part Number	Part Image	Price	Description	Load Rating kg [lb]	Requires	Recommended Screw Fastener *T-Slot Attachment 2 (ADC Part Number)	Pack Quantity	Material	Drawing Link
163010		$40.00	Leveling Caster with M12-1.75 x 35mm threaded stud (included)	250 [551]	Transport / Base Plate with M12-1.75 threaded hole	n/a	1	Die-cast aluminum/ steel/nylon/ rubber	PDF
163011		$52.00		500 [1102]					PDF
163012		$41.00	Leveling Caster With Mounting Plate	250 [551]	n/a	BHCS 1/4-20x7/16" (not sold by ADC)			PDF
163013		$56.00		500 [1102]					PDF

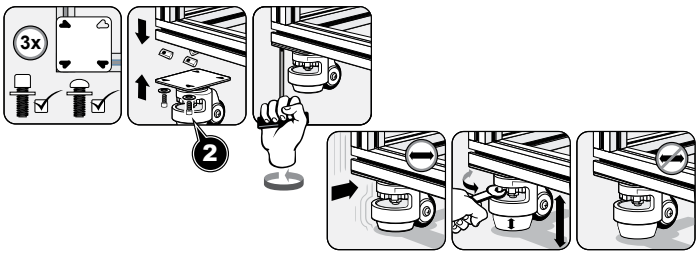
*T-Slot Nut with 1/4 washer also required.

Caster Installation

Leveling Caster with M12-1.75 x 35mm threaded stud



Leveling Caster with mounting plate



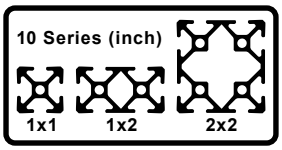
FATH® T-Slotted Rail Accessories

Hinges

- Recommended ADC Fastener based on part feature and slot depth
- Material: varies by part

10 Series Hinges

Fits Slot Size 6



Part Number	Part Image	Price	Description	Recommended Screw Fastener *T-Slot Attachment (ADC Part Number)	Pack Quantity	Material	Drawing Link
151076		$6.00	Left-Hand Detachable Combination Hinge	161074	1	Fiberglass reinforced plastic	PDF
151077		$6.00	Right-Hand Detachable Combination Hinge				PDF
151078		$6.00	Non-Detachable Combination Hinge				PDF
151079		$11.50	Non-Detachable Combination Hinge With Locking Lever				PDF
151080		$17.00	Left-Hand Detachable Combination Hinge			Die-cast aluminum	PDF
151081		$17.00	Right-Hand Detachable Combination Hinge				PDF
151082		$17.00	Non-Detachable Combination Hinge				PDF

*T-Slot Nut also required

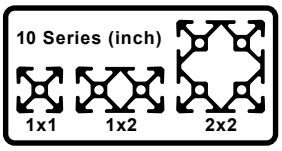
FATH® T-Slotted Rail Accessories

Panel and Door Elements

- Recommended ADC Fastener based on part feature and slot depth
- Material: varies by part

10 Series Panel and Door Elements

Fits Slot Size 6



Part Number	Part Image	Price	Description	Recommended Screw Fastener *T-Slot Attachment 2 (ADC Part Number)	Pack Quantity	Material	Drawing Link
151083		$4.25	Bridge Handle	162995	1	Fiberglass reinforced plastic	PDF
151084		$6.50	Cover Cap 3	n/a			PDF
151085		$4.50	Comfort Handle	161087			PDF
151086		$4.00	Cover Cap 3	n/a			PDF
151149		$6.50	Comfort Handle	151050			PDF
162910		$3.00	Panel Holder	151040		Anodized aluminum	PDF
162915		$5.25					PDF
162920		$5.25	Panel Mount Block	Fasteners included		Lacquered aluminum	PDF
162921		$5.25				Powder-coated aluminum black	PDF
162963		$8.50	Magnetic Catch	161047		Nylon/steel	PDF
162977		$8.50	Hanger	151040		Die-cast zinc	PDF
151087		$115.00	Cover And Reduction Profile, 2000mm long per piece	n/a	25	Polypropylene	PDF

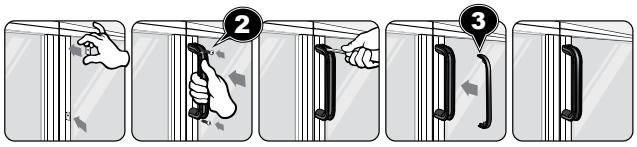
*T-Slot Nut also required

FATH® T-Slotted Rail Accessories

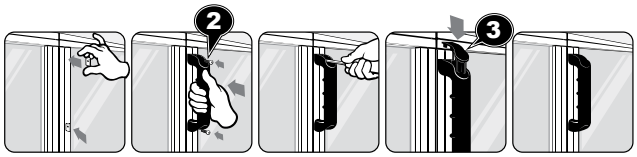
Panel and Door Elements - Continued

Panel and Door Elements Installation

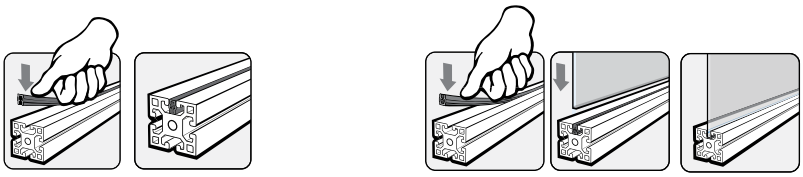
Bridge Handle and Cover Cap



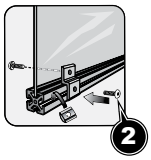
Comfort Handle and Cover Cap



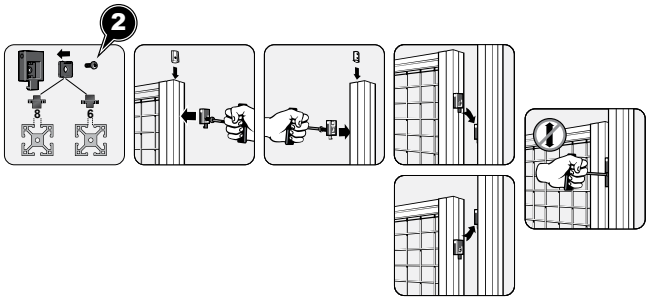
Cover and Reduction Profile



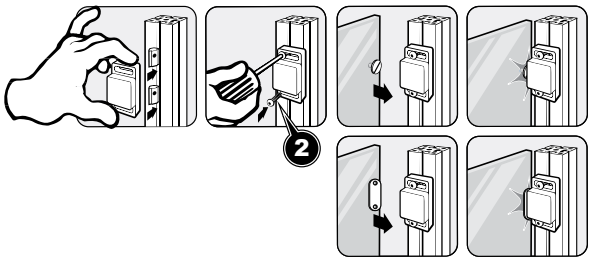
Panel Holder



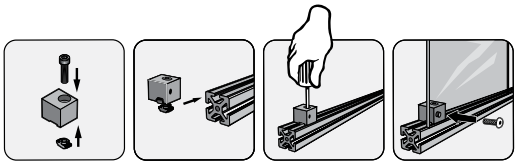
Hanger



Magnetic Catch



Panel Mount Block

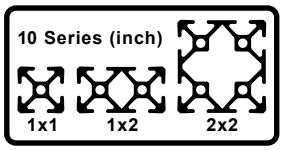


FATH® T-Slotted Rail Accessories

Slides and Rollers

10 Series Slides and Rollers

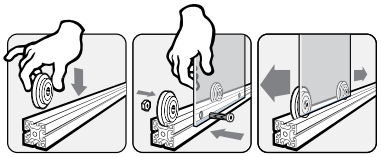
Fits Slot Size 6



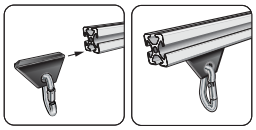
Part Number	Part Image	Price	Description	Fits	Pack Quantity	Material	Drawing Link
151090		$7.25	Roller	All 10 Series	1	Glass-filled nylon	PDF
151088		$4.50	Slider			Glass-filled nylon	PDF
151089		$4.50	Snap Hook	Slider 151088		Zinc plated steel	PDF

Slides and Rollers Installation

Roller



Slider and Snap Hook



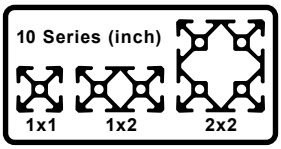
FATH® T-Slotted Rail Accessories

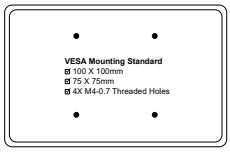
Monitor Mounts

10 Series Monitor Mounts

- Fits monitors with VESA mounting standard
- Durable steel construction
- Powder coat finish
- Mounting hardware included for several mounting locations

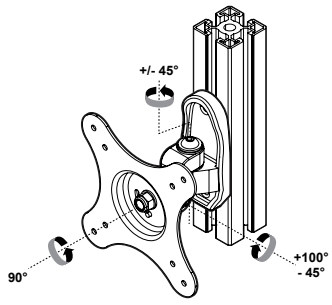
Fits Slot Size 6



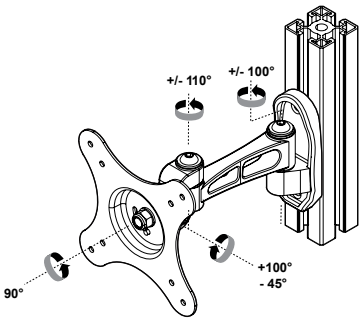


Part Number	Part Image	Price	Description	Load Rating kg [lb]	Pack Quantity	Installation Instructions Link	Drawing Link
162893		$42.00	Swivel Monitor Mount	15 [33.1]	1	PDF	PDF
162894		$50.00				PDF	PDF
162895		$58.00				PDF	PDF

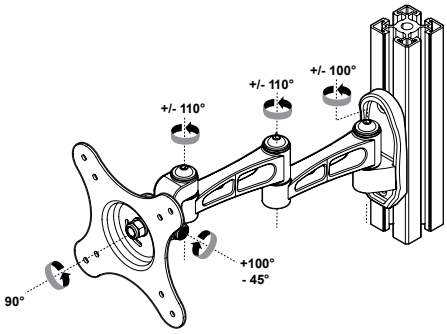
Monitor Mounts Adjustments



162893



162894



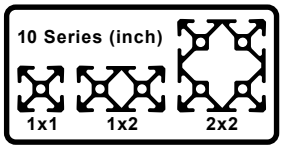
162895

FATH® T-Slotted Rail Accessories

Wire Management

10 Series Wire Management

Fits Slot Size 6

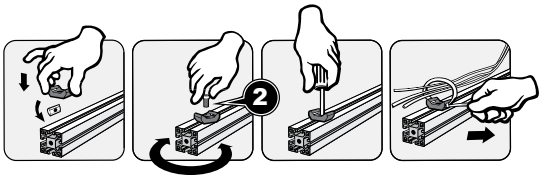


Part Number	Part Image	Price	Description	Pack Quantity	Recommended Screw Fastener *T-Slot Attachment 2 (ADC Part Number)	Material	Drawing Link
151095		$44.00	Clip Cable Binder With Hammer	10	n/a	Nylon/rubber	PDF
162982		$7.50	Universal Cable Binder Block		162993	Nylon	PDF

*T-Slot Nut also required

Wire Management Installation

Universal Cable Binder Block

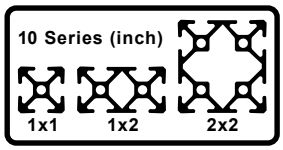


FATH® T-Slotted Rail Accessories

Miscellaneous Accessories

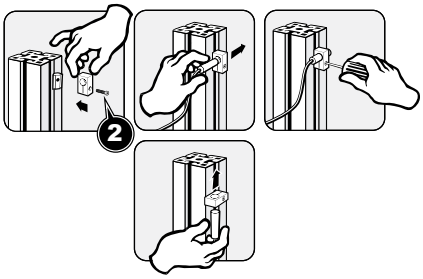
10 Series Miscellaneous Accessories

Fits Slot Size 6



Part Number	Part Image	Price	Description	Fits Profile	Recommended Screw Fastener *T-Slot Attachment 2 (ADC Part Number)	Pack Quantity	Material	Drawing Link
151092		$10.00	End Cap	1 x 1in	n/a	10	Glass-filled nylon	PDF
151093		$14.50		1 x 2in				PDF
151094		$19.00		2 x 2in				PDF
162973		$3.25	Sensor Mounting Block for 8mm diameter proximity sensor	All 10 Series	BHCS 8-32 x 3/4" (not sold by ADC)	1	Nylon	PDF
162974		$3.25	Sensor Mounting Block for 12mm diameter proximity sensor					PDF

*T-Slot Nut also required

Miscellaneous Accessories Installation

Sensor Mounting Block