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Services,
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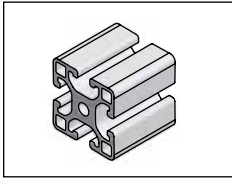
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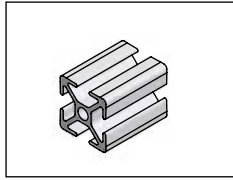
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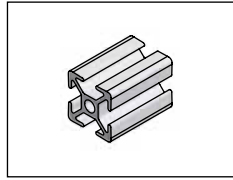
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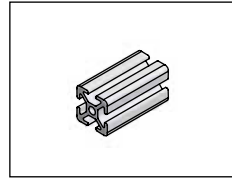
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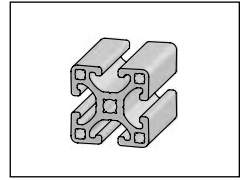
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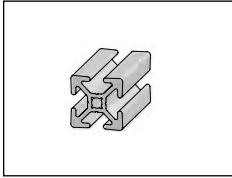
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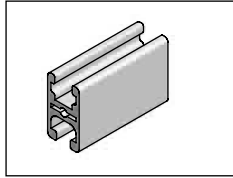
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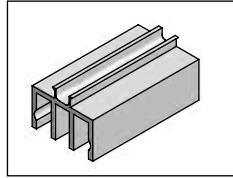
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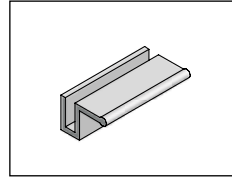
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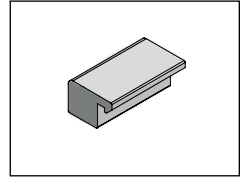
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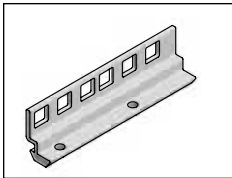
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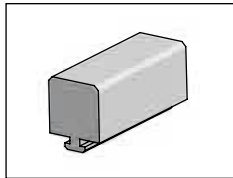
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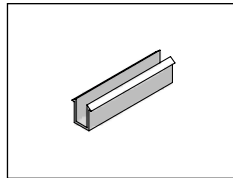
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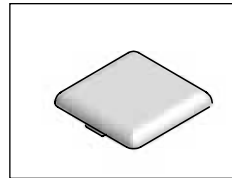
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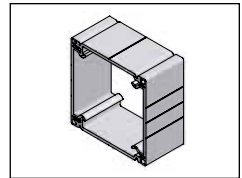
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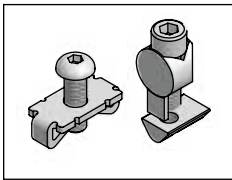


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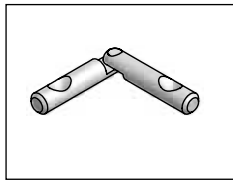


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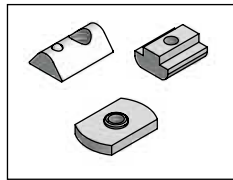
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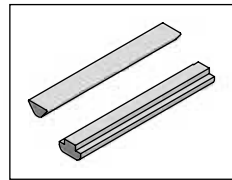
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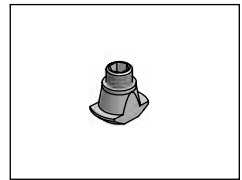
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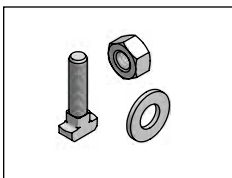
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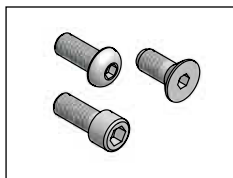
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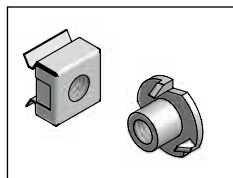
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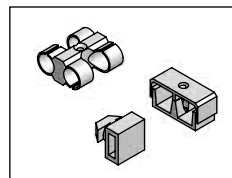
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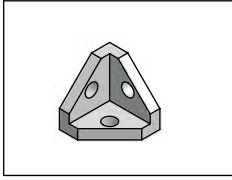


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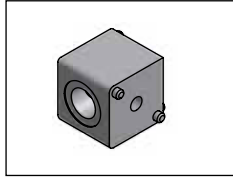


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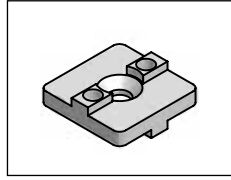
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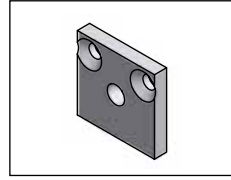
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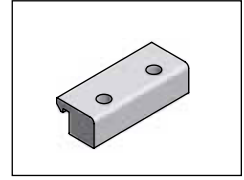
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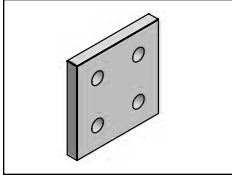
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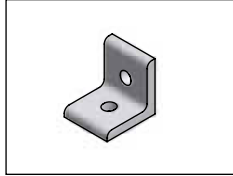
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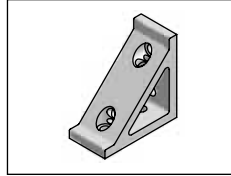
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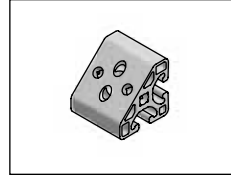
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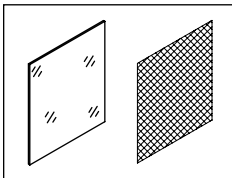


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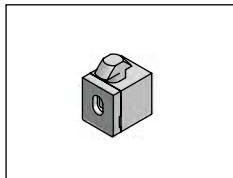


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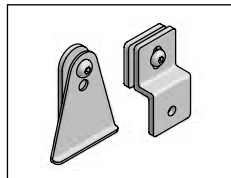
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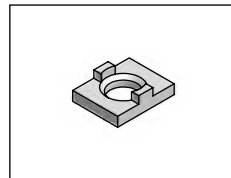
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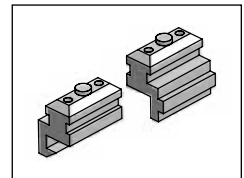
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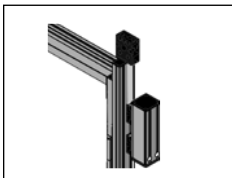
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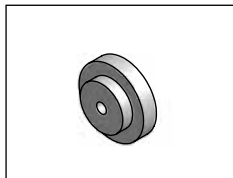
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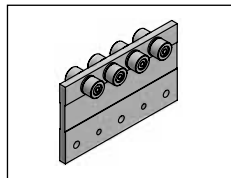
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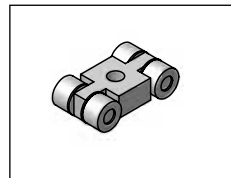
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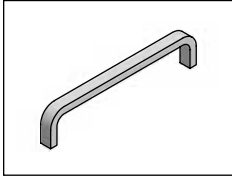


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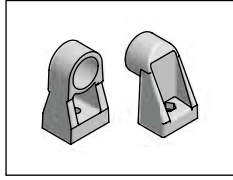


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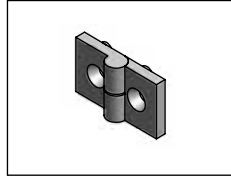
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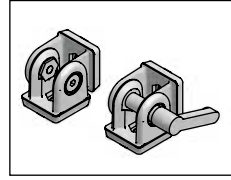
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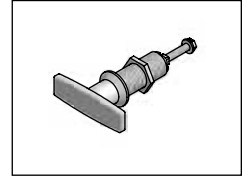
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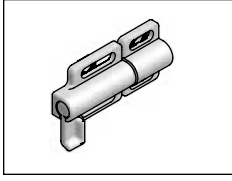
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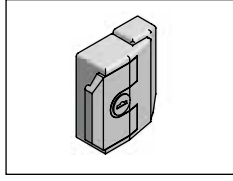
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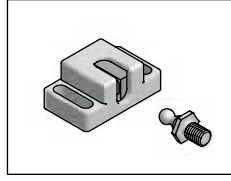
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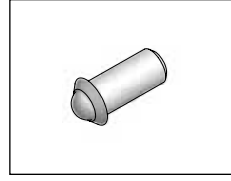
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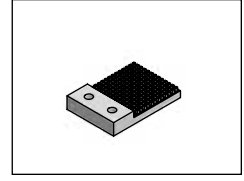
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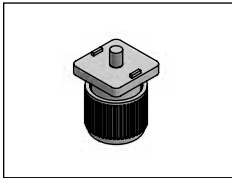


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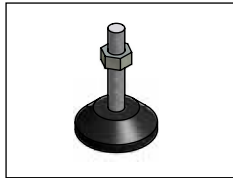


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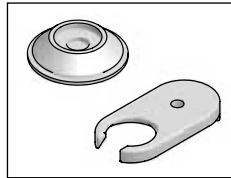
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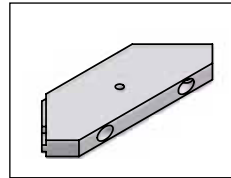
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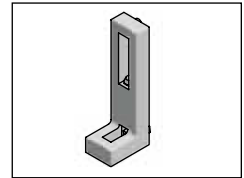
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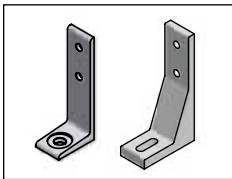
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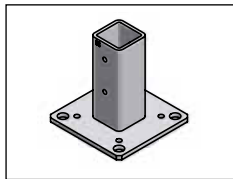
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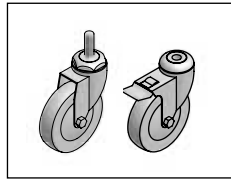
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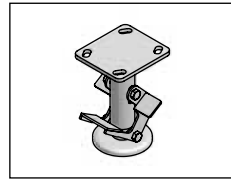
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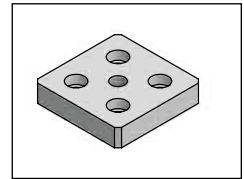
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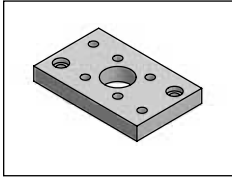


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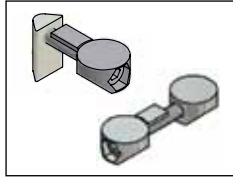


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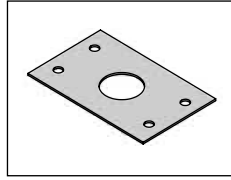
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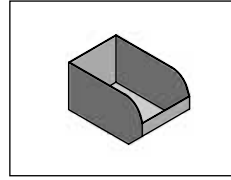
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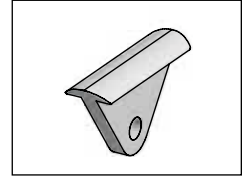
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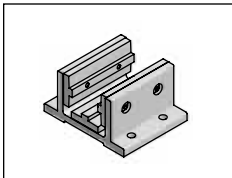


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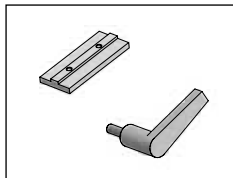


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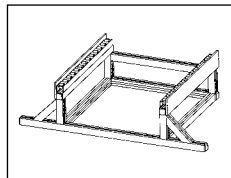
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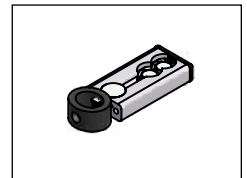
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Section 9 – Services, Assembly Tips & Tools

Section 10 – Index and Offer of Sale

Product Information

Each product page in the catalog includes:

- application information and examples
- technical information
- dimensions
- how to assemble
- recommended fasteners, if applicable
- ordering information (part #, unit and weight)

Profile Compatibility

As a quick reference for product compatibility, the Ordering Information section groups product by profile series. Additional information can be found in the applications drawings associated. Where available, the Recommended Hardware section will highlight the necessary hardware components based on the profile series application.

Contact your Parker IPS Service Center or Customer Service to discuss specials or applications not found in this catalog.

Catalog 1816-3/US
Door Stops

Industrial Profile Systems
Handles & Hinges

How to Assemble →

3D View ←

Dimensions ←

Part # ←

23-124

Technical Data →

Part #	A	B	C	D	E	F
23-125	51	44.5	25.4	30	4.75	M5

Technical Data ←

Aluminum, Clear Anodized with Velcro® Pad

Application Information →

Application
 Door Stops provide a positive stop to keep the door lined up with a frame. An optional Velcro® plate can be added to create a light-duty catch.

Handles & Hinges ←

23-125

Recommended Fastening Hardware →

Recommended Fastening Hardware (Order Separately)

Profile Series	Fastener	Part # 23-124	Part # 23-125	Part # 23-158
40, 30	Screws	24-120-6	24-220-6	24-212-5
	T-Nuts	20-056	20-056	20-052
28	Screws	24-120-6	24-210-5	24-210-5
	T-Nuts	20-055	20-038	20-038
1.5"	Screws	25-114-4	25-210-4	25-208-2
	T-Nuts	25-001 or 20-083	25-001 or 20-083	25-009 or 20-088
1"	Screws	25-112-4	25-206-2	25-206-2
	T-Nuts	25-031 or 25-034	25-030 or 25-035	25-030 or 25-035

Ordering Information ←

Description	Unit	Weight	Part #
Door Stop - Straight	Each	91 g	23-124
Door Stop 40, 30 - Angle	Each	91 g	23-125
Velcro® Plate	Each	9 g	23-158

* For wider surfaces, use 22-145 and apply velcro strip. Order M6 hardware separately.

Ordering Information →

Part # ←

23-158*

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Parker Hannifin Corporation
 Industrial Profile Systems
 Wadsworth, Ohio USA

Ordering Choices



Parker offers several ways to order metric and Inch product so that you can choose a level of service to suit your needs. You can order everything from a bundle of uncut profiles to a completely assembled structure.

- **Bundles** – IPS product line can be ordered as bundles of profiles and packages of fasteners and accessories to machine and assemble at your location.
- **UPS Shipping Requirements** – IPS profiles can be shipped via UPS Air if they are cut to 8' (2.4m) length max and each package does not exceed 70 lbs (31kg). Cut charges will apply.
- **Kits** – IPS product line can be ordered in a kit form where the profiles are cut and machined to order and fasteners and accessories are included based on a parts list. This kit can be assembled at your location.
- **Complete Assembly** – IPS product line can be ordered completely assembled and shipped as an assembled unit. Shipping costs should be a consideration when using this method.

Machining Services

- **Order cut to size** – specify the length in millimeters or decimal meter dimensions. Example: 1500mm or 1.5meters. See the conversion chart for fraction to decimal conversions. A cut charge will be included with cut to size lengths.
- **Additional machining** should also be specified along with the profile if it is required for fasteners or accessories. Standard machining options include tapping, drilling, and counter boring. See machining services pages in this catalog for correct part numbers. Any additional custom machining can be done by our expert machinists to ensure that your design is complete and to your requirements.
- **Cut to length tolerance** is $\pm .40\text{mm}$ [$\pm .015\text{"}]$.

Choosing a Fastener/Accessory

What aspect is critical for fastening?

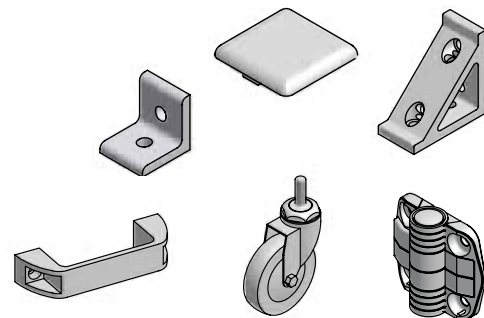
- Aesthetics/hidden (standard fastener, universal)
- Strength (universal fastener, standard)
- Ease-of-assembly/no machining (joining plate, gussets)
- Adjustability (gussets, angle bracket, universal)

When ordering universal fasteners or standard fasteners, machining operations are required for the fastener to work in a profile. Part numbers and descriptions for machining operations are found in the machining services section of the catalog.

Choices of Accessories

A full range of accessories are available to complete an assembly:

- T-slot Covers
- End Caps
- Brackets and Gussets
- Joining and Base Plates
- Casters
- Hinges
- Handles



What aspect is critical for accessories?

Parker offers a wide range of accessories to provide the right part for the special considerations of your application.

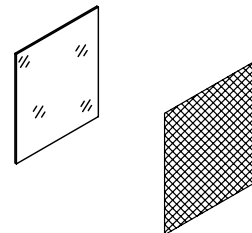
- Aesthetics
- Ease-of-assembly
- Load on structure
- Functionality

Panels & Wire Mesh

Panels and wire mesh can be ordered as a full sheet or cut to a specified dimension in square meters. When ordering full sheets, please add a P to the end of the part number that you are ordering (e.g. 26-790-6P)

Standard panel choices include:

- Lexan®
- TRESPA®
- Expanded PVC
- PVC coated wire mesh
- Aluminum Composite



Specialty panels of any material can be ordered for any project. Additional time may be required to expedite any specials.

Mechanical Properties

- All structural IPS profiles are prime aluminum, mill-certified with metallurgical properties of 6105-T5 or 6005-T5. Accessory products are 6061-T6 or 6063-T6.
 - Yield (0.2 limit) Rm min. 240 N/mm² (35,000 psi)
 - Tensile strength Rm min. 260 N/mm² (38,000 psi)
- Note: Cross sectional thickness variations of the profiles may influence yield and tensile strength.
- Elongation for 2 in. long specimens:
6005-T5 (thickness up thru 0.124 in), 6061-T6 (up thru 0.249 in),
6105-T5 (up thru 0.5 in) – 8% min
6005-T5 (thickness 0.125-1 in.), 6061-T6 (0.25 in. and over) – 10% min
 - Elasticity E approximately 70,000 N/mm² (10,150 kpsi)
 - Brinell Hardness approximately 75 HB 2.5/187.5
 - The molecular structure of the 6005-T5 alloy is generally stable in an ambient temperature range of:
-40°C to +200°C (-40°F to +392°F)
Extreme temperature fluctuations may change the mechanical properties.

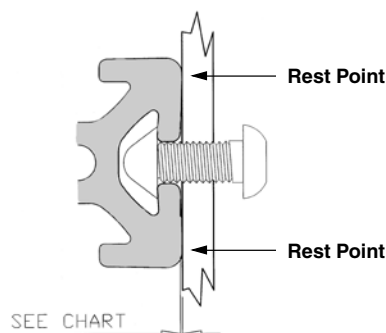
Profile Finish

- Clear anodizing: AA M10, C22, A31, Clear
- Black anodizing: AA M10, C22, A34, Black
- Minimum depth: 0.010mm (0.0004 in.)
- Surface hardness: approximately 250 HV, outer surface exposed
- Custom anodizing and protective finishes available

Tolerances

- Extrusions conforming to DIN 17 615 specifications and to IPS blueprints.
- Twist per 300mm (1 ft) length not to exceed 0.25° and total twist over 6m (20 ft) length not to exceed 1.5°.
- Flatness 0.10mm (0.004 in) per 25mm (1 in) of width.
- Straightness 0.32mm (0.0125 in) per 300mm (1 ft) of length and not exceeding 3mm (0.12 in) over 6m (20 ft) of extrusion.
Maximum bow 3mm (0.12 in) over 6m (20 ft).
- Cut to length tolerance ± .40mm [± .015"]

Defined Rest Points



All 40, 30, 28, 20, 1.5" and 1" series profiles have a taper built-in to the T-slot. Preload in the material elastic range results in a vibration safe connection because the profile is pulled flush with the connecting surface during fastener tightening. The high quality material ensures that the profile T-slot will remember it's original shape if disassembly is required, making all IPS profiles completely reusable.

Profile Series	Preload Range
40, 30, 28	0.2mm
20	0.1mm
1.5", 1"	0.008" (0.2mm)

Deflection Calculation

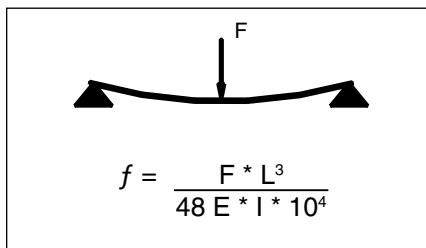


Application

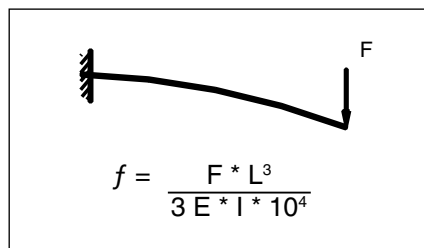
Stand-alone program able to calculate deflection and stress of IPS aluminum profiles based on profile selection, length and load (evenly distributed and/or concentrated at the critical point). Three cases for the profile attachment are calculated: supported at both ends, fixed at one end, fixed at both ends. Metric or English units of measure can be used to enter profile length and load. Calculated deflection given in both millimeters and inches. Stress values are given in both N/mm² and psi. System requirements: Windows 9x, Windows NT 3.0 or higher, 133MHz, 16MB RAM.

Formulas for calculating deflection at critical points

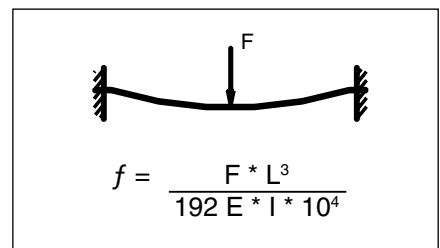
Supported at both ends



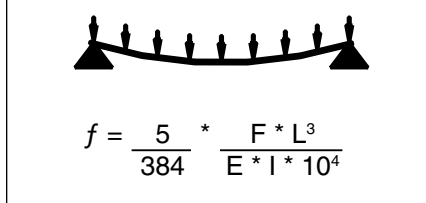
Fixed at one end



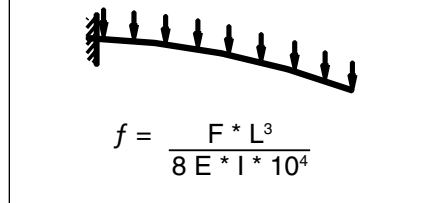
Fixed at both ends



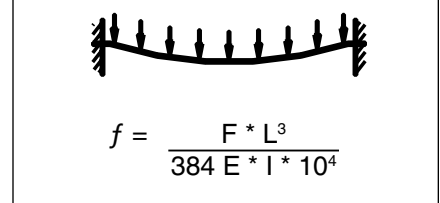
Total Load F



Total Load F

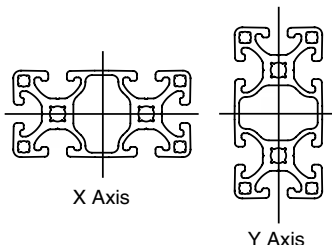


Total Load F



In the formulas:

- f = deflection in mm
- F = load in N
- L = free profile length in mm
- E = Modulus of Elasticity in N/mm²
E_{Al} = 70,000 N/mm²
- I = Moment of inertia in cm⁴



Example

Find the deflection for the following conditions:
80x40 Standard Profile (10-080), upright
I_x = 71.97 cm⁴
m = 3.18 kg/m
L = 1000 mm
F = 50 N - concentrated load
No additional load other than profile weight

Calculate Profile weight (uniform load)
F_U = m * L * g = (3.18 * 10⁻³) * 1000 * 9.81 = 31.2 N

Total deflection $f_{TOTAL} = f_{CONCENTRATED} + f_{UNIFORM}$

Supported at both ends:
f = 0.021 + 0.008 ≈ 0.03mm

Fixed at one end:
f = 0.331 + 0.077 ≈ 0.041mm

Fixed at both ends:
f = 0.005 + 0.002 ≈ 0.01 mm

Fractions to Decimals

Fraction	Decimal
1/16	0.063
1/8	0.125
3/16	0.188
1/4	0.25
5/16	0.313
3/8	0.375
7/16	0.438
1/2	0.50
9/16	0.563
5/8	0.625
11/16	0.688
3/4	0.75
13/16	0.813
7/8	0.875
15/16	0.938

Metric/English Conversions

Below is a conversion chart for converting metric and English units of measure for applicable physical conditions with this product line.

	Multiply	by	To Get
Linear	mm	0.03937	Inches
	Inches	25.4	mm
	cm	0.3937	Inches
	m (meter)	3.2808	Feet
	Feet	0.3048	m (meters)
Area	mm ²	0.00155	Inches ²
	Inches ²	645.16	mm ²
Volume	cm ³	0.06102	inches ³
	inches ³	16.387	cm ³
	inches ³	0.0165	liters
	Liters	61.024	inches ³
Mass	Gram (g)	0.0353	Ounce (oz)
	Ounce (oz)	28.329	Gram (g)
	Kilogram (kg)	2.2046	Pounds (lb)
	Pounds	0.4536	Kilograms (kg)
Velocity	Meters/Minute	3.281	Feet/Minute
	Feet/Minute	0.3048	Meters/Minute
Force	Kilograms-f (kgf)	9.807	Newtons (N)
	Newtons (N)	0.10194	Kilograms-f (kgf)
	Pounds-f (lbf)	4.448	Newtons (N)
	Newtons (N)	0.2248	Pounds-f (lbf)
Pressure	Bar	14.5	PSI
	PSI	0.069	Bar
Torque	Newton-Meters (Nm)	8.851	Pound-Inches (lb-in)
	Pound-Inches	0.11298	Newton-Meters (Nm)
Moment of Inertia	cm ⁴	0.02403	inch ⁴
	inch ⁴	41.623	cm ⁴



WARNING - USER RESPONSIBILITY

FAILURE OR IMPROPER SELECTION OR IMPROPER USE OF THE PRODUCTS DESCRIBED HEREIN OR RELATED ITEMS CAN CAUSE DEATH, PERSONAL INJURY AND PROPERTY DAMAGE.

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The user, through its own analysis and testing, is solely responsible for making the final selection of the system and components and assuring that all performance, endurance, maintenance, safety and warning requirements of the application are met. The user must analyze all aspects of the application, follow applicable industry standards, and follow the information concerning the product in the current product catalog and in any other materials provided from Parker or its subsidiaries or authorized distributors.

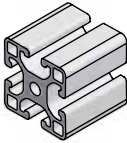
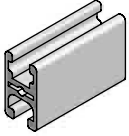
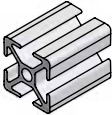
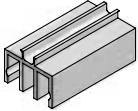
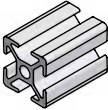
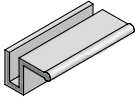

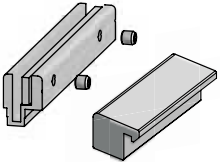

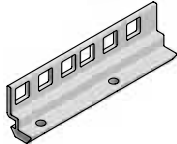

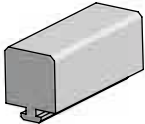

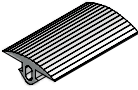
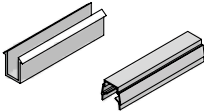
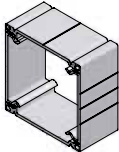
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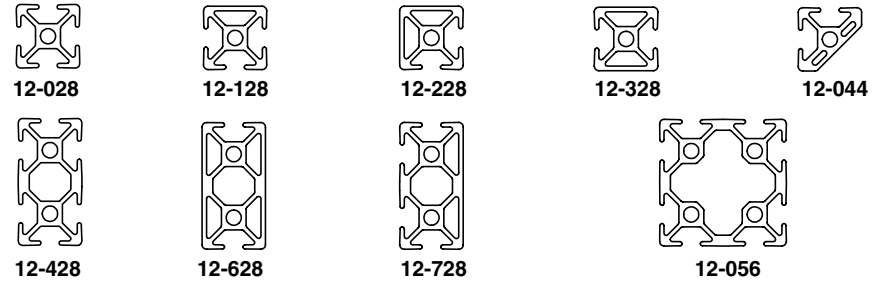
Section 1 Basic & Specialty Profiles

Basic Profiles		Specialty Profiles	
40 Series	17-31		32x18 Frame Profile 54 
30 Series	32-35		Door Profiles 55 
			Rolling Door Guide 55
			Sliding Door Guide 56
28 Series	36-40		Panel Profiles 57 
			Stiffener/Handle 57
			Panel Mounting 57
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			Mesh Clamp 58
			Clamp Bar 58
1.5" Series	44-50		Rack Angle 59 
1" Series	51-52		UHMW Profiles 60 
End Caps	63-65		Profile Covers 60 
			Panel/Mesh Gaskets 61
			Cover Strips 62 
			Conduit Profiles 67-71 
			Conduit End Caps 72

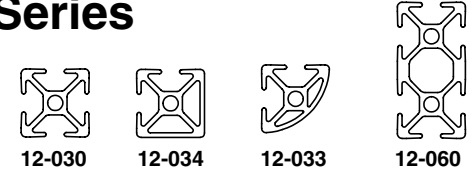
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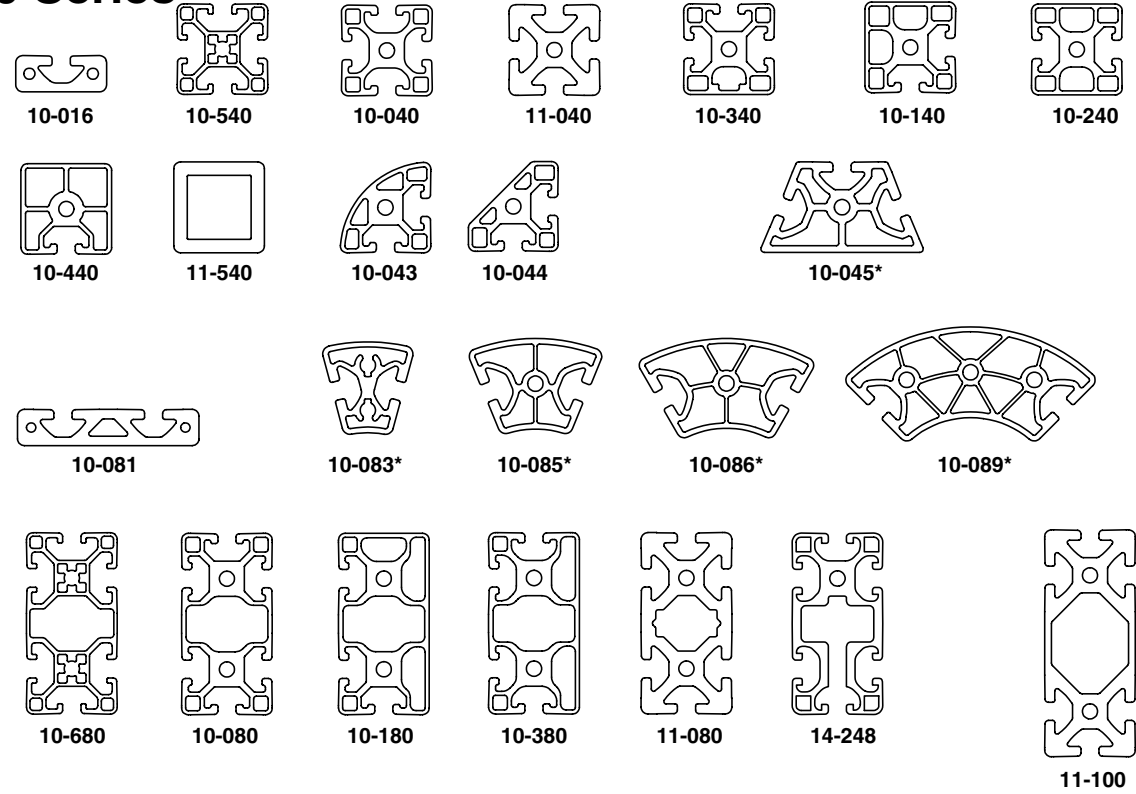
28 Series



30 Series



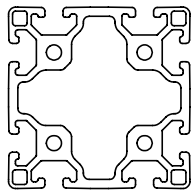
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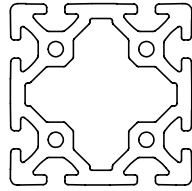
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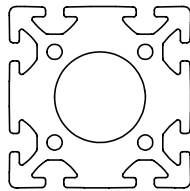
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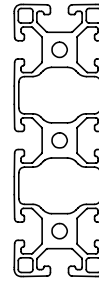
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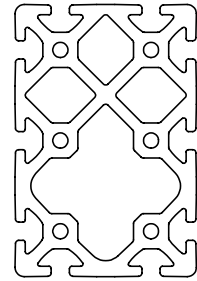
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11-089



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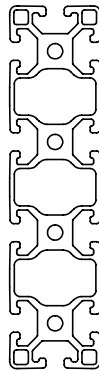
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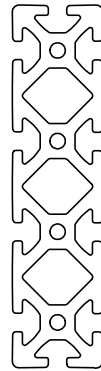
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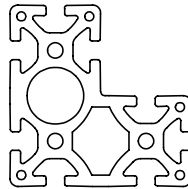
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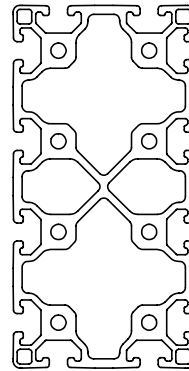
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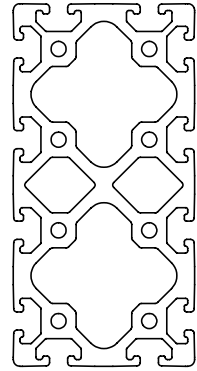
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11-084*



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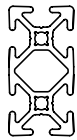


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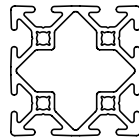
1" Series



12-1010

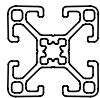


12-1020



12-2020

1.5" Series



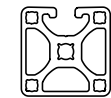
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10-1515



11-1515



10-1591



10-1592



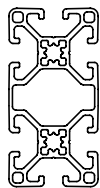
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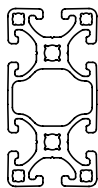
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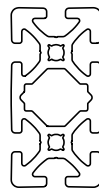
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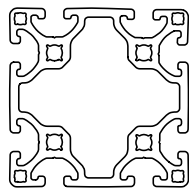
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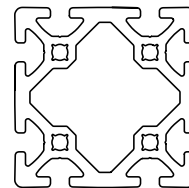
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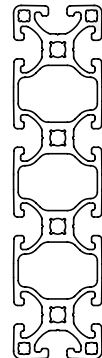
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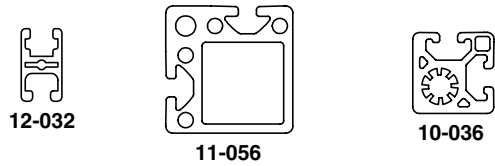
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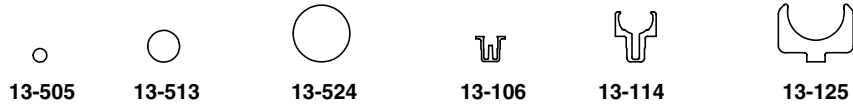
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*Available in 3m bar only.

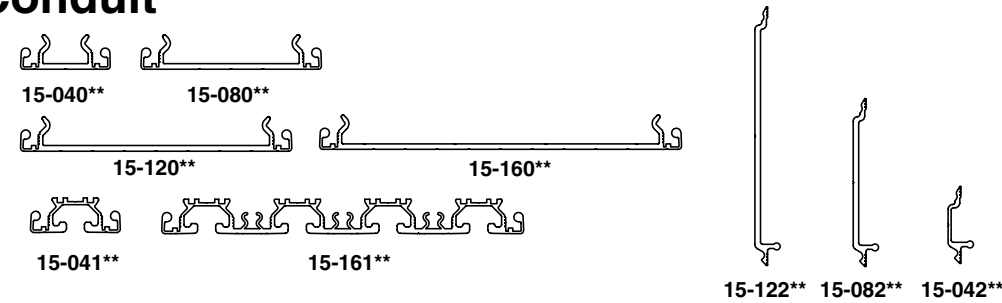
Specialty Profiles



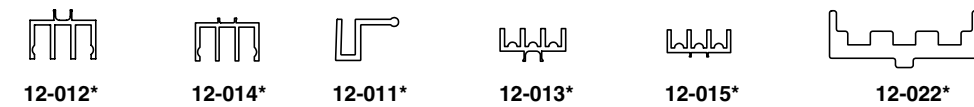
Roller Systems



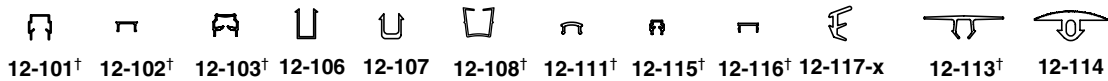
Conduit**



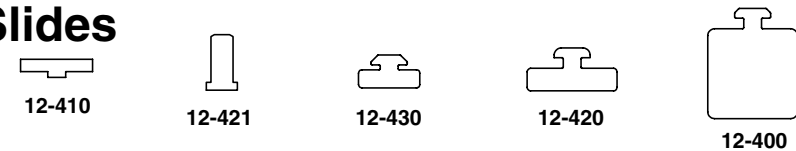
Door



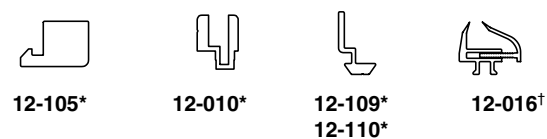
T-Slot Covers



Slides



Panel



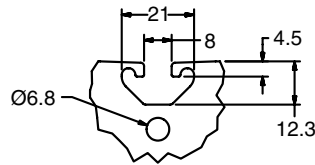
†Available in 2m bar only.
 *Available in 3m bar only.
 **Available in 4m bar only.

40 Series Profiles

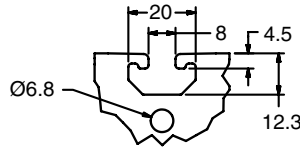
Part #	Description	Moment of Inertia		Section Modulus		Section [cm ²]	Weight [kg/m]	Cat. Page
		I _x [cm ⁴]	I _y [cm ⁴]	W _x [cm ³]	W _y [cm ³]			
10-016	Profile 16x40	1.10	7.19	1.29	3.60	4.38	1.17	24
10-036	Profile Post 36x36	8.55	8.55	4.32	4.32	7.18	1.94	31
10-040	Profile 40x40 Standard	9.46	9.46	4.73	4.73	6.65	1.72	19
10-043	Profile 40x40 Quarter Round ST	6.95	6.95	3.15	3.15	5.87	1.59	21
10-044	Profile 40x40-45° Standard	6.79	6.79	3.03	3.03	5.72	1.53	22
10-045	Profile 40x45° Standard	16.25	34.51	7.40	12.20	10.22	2.76	22
10-080	Profile 80x40 Standard	17.23	71.56	8.62	17.89	11.49	3.18	26
10-081	Profile 16x80	2.22	50.72	2.61	12.68	8.41	2.20	24
10-083	Profile R40x80 30° Standard	8.48	5.87	4.01	3.64	5.71	1.57	23
10-085	Profile R40x80 45° Standard	10.69	16.64	4.75	8.23	6.99	1.92	23
10-086	Profile R40x80 60° Standard	13.02	35.75	6.30	10.38	8.26	2.25	23
10-088	Profile 80x80 Standard	136.85	136.85	34.21	34.21	19.98	5.45	27
10-089	Profile R40x80 90° Standard	21.68	110.54	8.73	20.89	12.67	3.44	23
10-120	Profile 120x40 Standard	25.04	225.56	12.52	37.59	16.66	4.35	28
10-140	Profile 40x40 Bi-Slot Corner	9.29	9.29	4.64	4.64	6.67	1.81	20
10-160	Profile 160x80 Standard	268.68	738.22	67.17	92.28	37.76	10.29	29
10-161	Profile 16x160	3.73	289.10	4.13	36.14	12.98	3.45	24
10-164	Profile 160x40 Standard	32.84	368.96	16.42	46.12	21.23	5.80	28
10-180	Profile 80x40 Tri-Slot Corner	16.61	68.92	8.14	17.15	11.16	2.83	26
10-240	Profile 40x40 Bi-Slot Mid-Frame	9.57	9.13	4.79	4.57	6.73	1.82	20
10-340	Profile 40x40 Tri-Slot	9.94	9.33	4.01	4.66	6.83	1.82	20
10-380	Profile 80x40 Quad-Slot	16.77	69.20	8.21	17.30	11.28	3.06	26
10-440	Profile 40x40 Mono-Slot	8.47	8.71	4.08	4.35	5.81	1.56	20
10-540	Profile 40x40 Light	8.27	8.27	4.14	4.14	5.20	1.41	19
10-680	Profile 80x40 Light	15.30	56.78	7.65	14.70	9.10	2.46	26
11-040	Profile 40x40 Heavy	14.26	14.26	7.13	7.13	9.29	2.53	19
11-056	Profile Post 56x56	46.09	46.09	14.98	14.98	13.17	3.53	31
11-080	Profile 80x40 Heavy	26.97	102.65	13.48	25.66	16.74	4.58	26
11-084	Profile 80x80x40 Corner Heavy	127.47	128.57	27.62	27.66	23.23	6.27	30
11-088	Profile 80x80 Heavy	186.37	186.37	46.59	46.59	26.23	7.02	27
11-089	Profile 80x80 Extra Heavy	223.90	223.90	55.97	55.97	37.39	9.83	27
11-100	Profile 40x100 Heavy	31.22	193.34	15.61	38.67	18.02	4.94	25
11-122	Profile 120x80 Heavy	274.14	738.22	68.53	119.29	39.79	10.82	27
11-128	Profile 28x160	20.62	737.99	14.73	92.25	31.27	8.46	25
11-140	Profile 160x40 Heavy	53.10	738.07	26.55	92.26	32.17	8.72	28
11-160	Profile 160x80 Heavy	343.37	1106.92	85.84	138.37	48.23	13.07	29
11-540	Profile 40x40 Heavy Square	15.78	15.78	7.89	7.89	7.98	2.16	31

T-Slot Detail

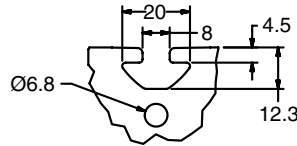
Light



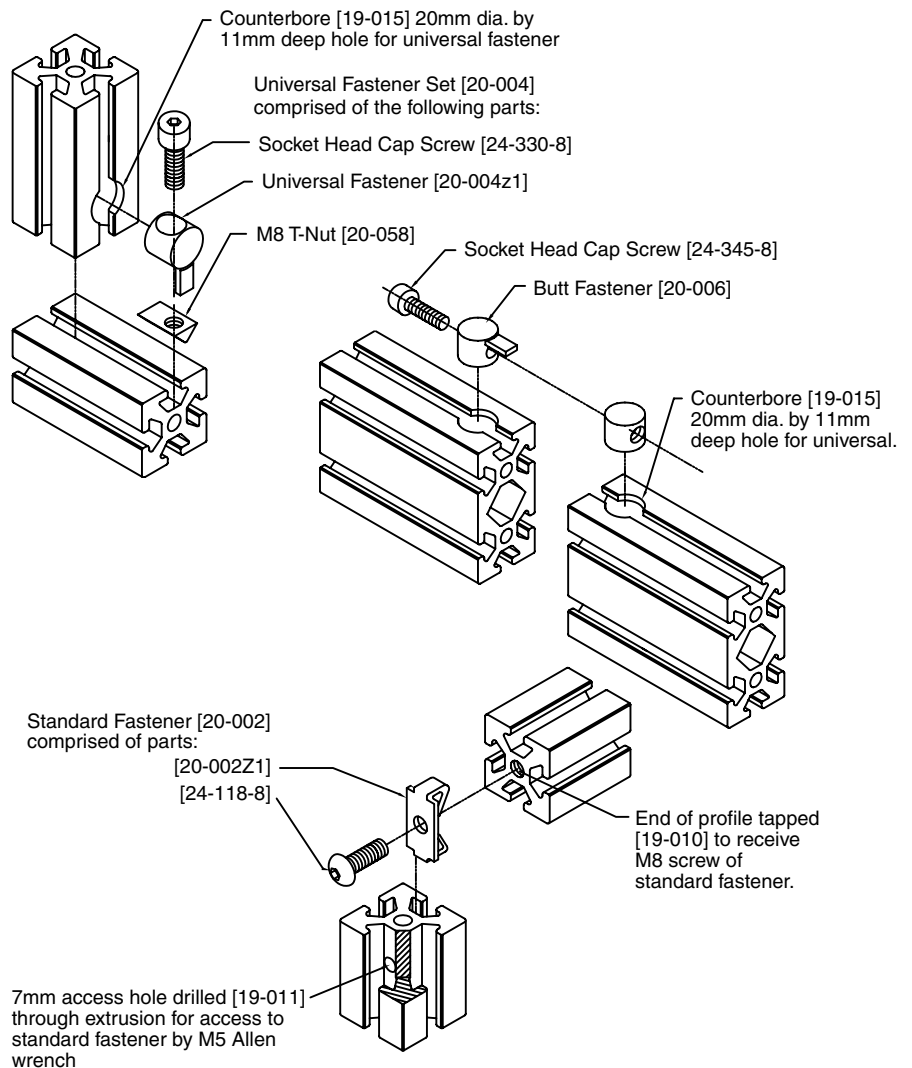
Standard



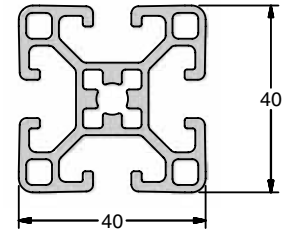
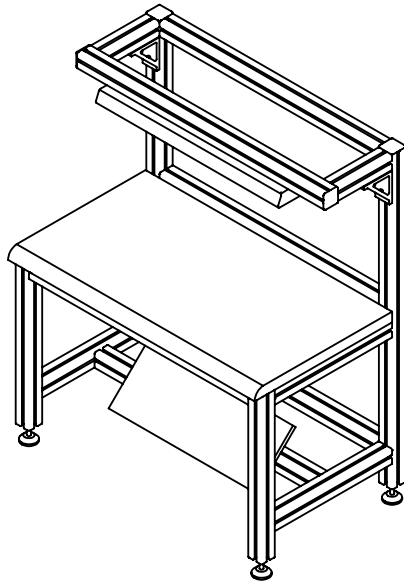
Heavy



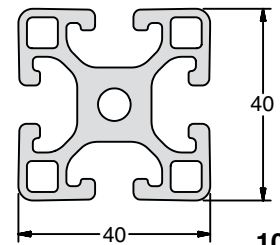
Service



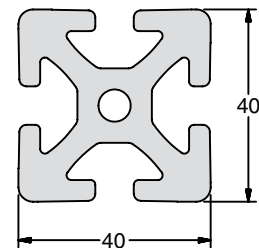
40x40 Slotted Profiles



10-540



10-040



11-040

Application

With T-slots located on all four faces this profile provides extensive mounting options for connections and accessories directly onto a structure, making this an excellent choice for general purpose applications such as workstations, machine guarding and enclosures. These profiles are weight optimized and available in light, standard and heavy ratings.

Technical Data

Aluminum, Clear or Black Anodized (See Technical Data page 9 for full material and finish specifications)

Part #	I_x [cm ⁴]	I_y [cm ⁴]	W_x [cm ³]	W_y [cm ³]	Section [cm ²]	Weight [kg/m]
10-540	8.27	8.27	4.14	4.14	5.20	1.41
10-040	9.46	9.46	4.73	4.73	6.65	1.72
11-040	14.26	14.26	7.13	7.13	9.29	2.53

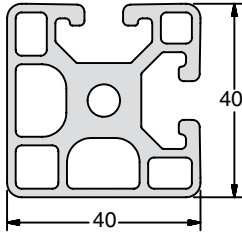
Ordering Information

Description	Unit	Part # (Clear)	Part # (Black)
Profile 40x40 Light	Cut off max. 6m	10-540	10-540B
Profile 40x40 Standard	Cut off max. 6m	10-040	10-040B
Profile 40x40 Heavy	Cut off max. 6m	11-040	
*Saw Cut Needed for Cut to Length		19-001	19-001

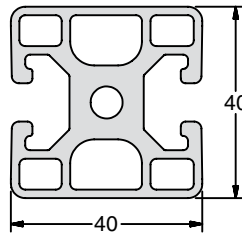
Quick Reference for Mating Components

Fasteners		Structural Accessories	
Standard Fastener (Single)	20-144	Levelers	Page 156
Standard Fastener	20-002	Casters	Page 167
Universal Fastener	20-004	Plates	Page 102
End Caps		Gussets	Page 104
40x40	18-813	Fasteners	Page 73
40x40 Secure	18-913	Machining & Processing	Page 231

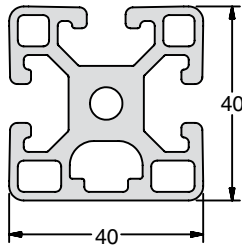
40x40 Closed Face Profiles



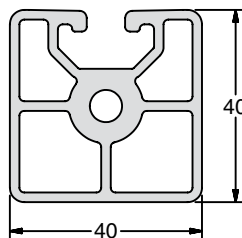
10-140



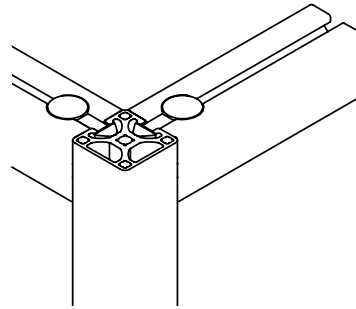
10-240



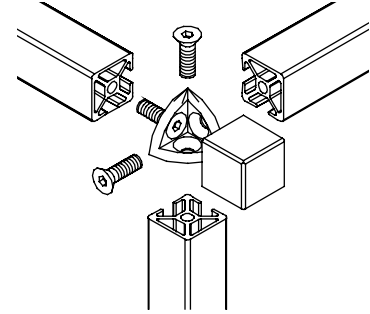
10-340



10-440



Universal Fastening Set 20-004
on 40 x 40 bi-slot corner profile.



Corner Bracket and Square Connector
Cap used with 40 x 40 bi-slot corner
profile.

Application

These profiles are similar to 40X40 Standard profiles except closed faces are positioned in various arrangements. This provides efficient fastening in a variety of configurations while retaining a smooth surface for applications requiring an aesthetically clean look. They are particularly useful in clean room, packaging, medical and pharmaceutical applications as they reduce areas where contaminants and dirt could potentially accumulate.

Technical Data

Aluminum, Clear Anodized (See Technical Data page 9 for full material and finish specifications)

Part #	I_x [cm ⁴]	I_y [cm ⁴]	W_x [cm ³]	W_y [cm ³]	Section [cm ²]	Weight [kg/m]
10-140	9.29	9.29	4.64	4.64	6.67	1.81
10-240	9.57	9.13	4.79	4.57	6.73	1.82
10-340	9.94	9.33	4.01	4.66	6.83	1.82
10-440	8.47	8.71	4.08	4.35	5.81	1.56

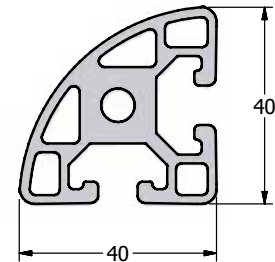
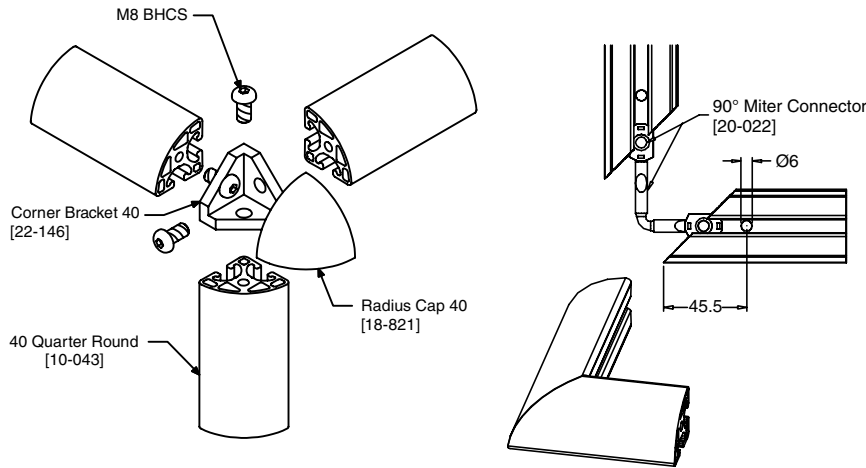
Ordering Information

Description	Unit	Part # (Clear)
Profile 40x40 Bi-Slot Corner	Cut off max. 6m	10-140
Profile 40x40 Bi-Slot Mid-Frame	Cut off max. 6m	10-240
Profile 40x40 Tri-Slot	Cut off max. 6m	10-340
Profile 40x40 Mono-Slot	Cut off max. 6m	10-440
*Saw Cut Needed for Cut to Length		19-001

Quick Reference for Mating Components

Fasteners		T-Nuts	
Standard Fastener (Single)	20-144	M5 Roll-In	20-052
Universal Fastener	20-004	M6 Roll-In	20-056
Flat Plate Fast.	20-028	M8 Roll-In	20-058
End Caps		M8/40 Double Roll-In	20-050
40x40	18-813	M6 Economy Standard	20-080
40x40 Secure	18-913	M8 Economy Standard	20-081

40x40 Quarter Round Profile



10-043

Application

This profile is designed with a radius quarter round face and T-Slots on the remaining perpendicular sides. This is particularly useful for engineering frames, workstation edges, shelving or enclosures where a rounded edge is aesthetically or functionally desirable.

Technical Data

Aluminum, Clear Anodized (See Technical Data page 9 for full material and finish specifications)

Part #	I_x [cm ⁴]	I_y [cm ⁴]	W_x [cm ³]	W_y [cm ³]	Section [cm ²]	Weight [kg/m]
10-043	6.95	6.95	3.15	3.15	5.87	1.59

Ordering Information

Description	Unit	Part # (Clear)
Profile 40x40 Quarter Round	Cut off max. 6m	10-043
*Saw Cut Needed for Cut to Length		19-001

Quick Reference for Mating Components

Fasteners

Flat Plate Fastener	20-028
90° Miter Connector	20-128Z1
40 Series Miter Connector	20-022

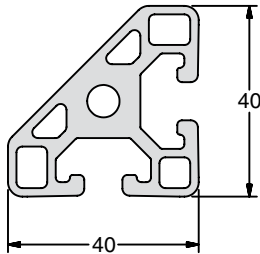
End Cap

40x40 Quarter Round	18-843
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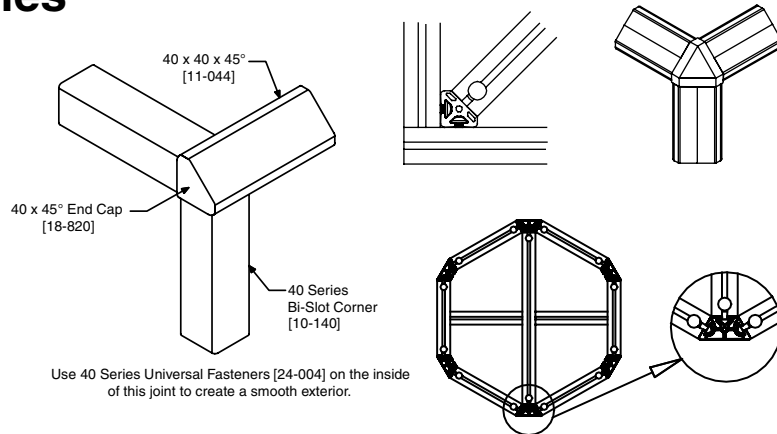
Radius Profile Accessories

Connector Cap, Radius	18-821
Tap profile end for M8	19-010
45° Miter Cut	19-105
Special Miter Cut	19-104

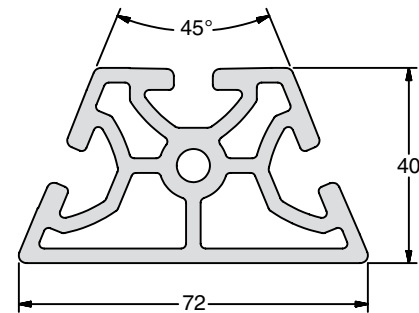
40 Series Angled Profiles



10-044



Use 40 Series Universal Fasteners [24-004] on the inside of this joint to create a smooth exterior.



10-045**

Application

With angled faces and perpendicular T-Slots, profile 10-044 is ideal for smoothing corners of structures for clean room, medical, pharmaceutical as well as display and workstation applications. This can also be used as gussets or for placing profiles at a 45° angle within a structure.

Profile 10-045 provides T-Slots on three sides: one parallel with the closed face, and two positioned to provide a 45° angle. This profile can be used when creating polygonal shaped structures.

Technical Data

Aluminum, Clear Anodized (See Technical Data page 9 for full material and finish specifications)

Part #	I _x [cm ⁴]	I _y [cm ⁴]	W _x [cm ³]	W _y [cm ³]	Section [cm ²]	Weight [kg/m]
10-044	6.79	6.79	3.03	3.03	5.72	1.53
10-045	16.25	34.51	7.40	12.20	10.22	2.76

Ordering Information

Description	Unit	Part # (Clear)
Profile 40x40-45° Standard	Cut off max. 6m	10-044
Profile 40x45°. Standard	Each, 3m**	10-045
*Saw Cut Needed for Cut to Length		19-001

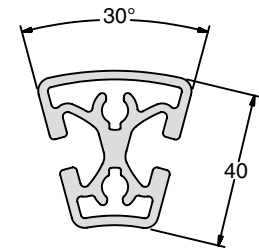
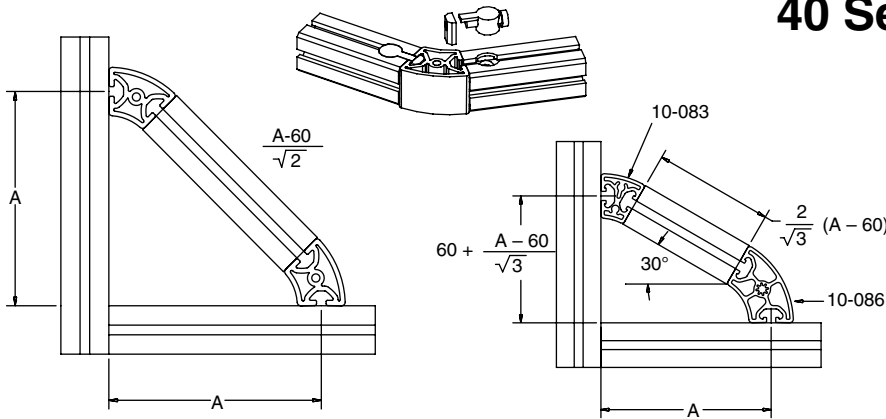
Quick Reference for Mating Components

Fasteners		Angle Profile Accessories	
Standard Fastener (Single)	20-144	Corner Bracket 40	22-146
Universal Fastener	20-004	Connector Cap, 3x45°	18-822
End Caps		Connector Cap, 2x45°	18-836
40x40-45°	18-820	45° Miter Cut	19-105
40-45°	18-845	Special Miter Cut	19-104
		Tap profile end for M8	19-010

** Available in 3m bar only



40 Series Radius Profiles



10-083**

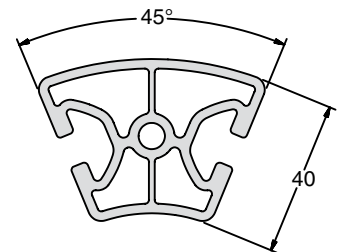
Application

Radius surfaces on two facing sides make these profiles particularly useful for creating rounded corners. They are ideal for applications requiring an aesthetically pleasing look, or where contaminants and dirt must be kept to a minimum such as medical and pharmaceutical environments. These profiles are also useful in constructing cases, tables and angled structure bases.

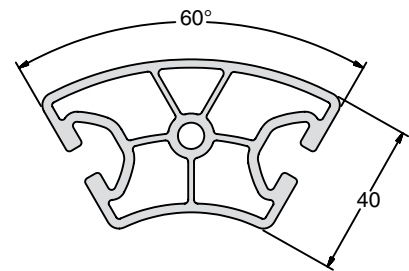
Technical Data

Aluminum, Clear Anodized (See Technical Data page 9 for full material and finish specifications)

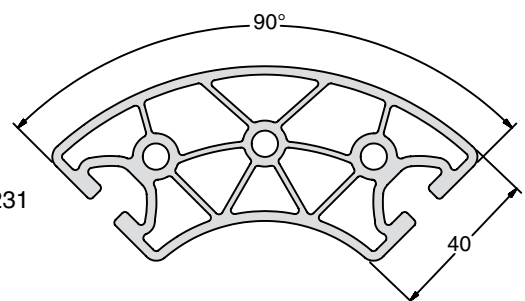
Part #	I _x [cm ⁴]	I _y [cm ⁴]	W _x [cm ³]	W _y [cm ³]	Section [cm ²]	Weight [kg/m]
10-083	8.48	5.87	4.01	3.64	5.71	1.57
10-085	10.96	16.64	4.75	8.23	6.99	1.92
10-086	13.02	35.75	6.30	10.38	8.26	2.25
10-089	21.68	110.54	8.73	20.89	12.67	3.44



10-085**



10-086**



10-089**

Ordering Information

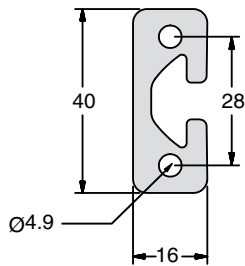
Description	Unit**	Part # (Clear)
Profile R40x80 30° Standard	Each, 3m	10-083
Profile R40x80 45° Standard	Each, 3m	10-085
Profile R40x80 60° Standard	Each, 3m	10-086
Profile R40x80 90° Standard	Each, 3m	10-089
*Saw Cut Needed for Cut to Length		19-001

Quick Reference for Mating Components

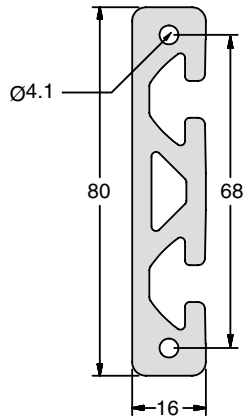
Fasteners	Structural Accessories
Universal Fastener 20-004	Machining & Processing Page 231

** Available in 3m bar only.

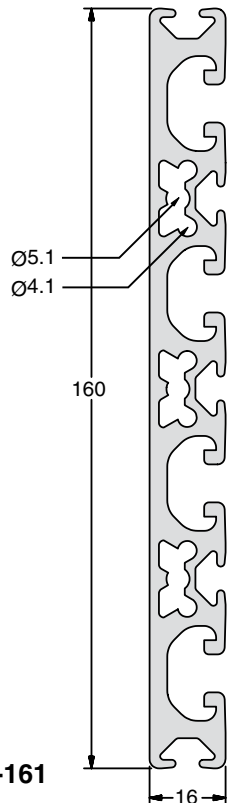
40 Series 16mm Profiles



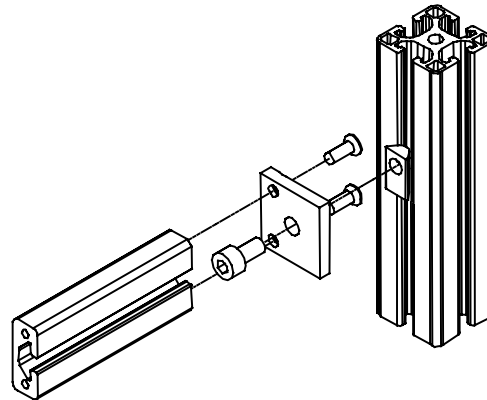
10-016



10-081



10-161



Application

Light construction and support for attaching items such as valves, limit switches, pneumatics and control equipment. Profile 10-081 can be used as a base plate on Roller System 6 Bearing Units. Profile 10-161 has a large surface area with 8mm and 5mm T-Slots providing convenient attachment points for multiple accessories (this profile should not be used as a structural member).

Technical Data

Aluminum, Clear Anodized (See Technical Data page 9 for full material and finish specifications)

Part #	I_x [cm ⁴]	I_y [cm ⁴]	W_x [cm ³]	W_y [cm ³]	Section [cm ²]	Weight [kg/m]
10-016	1.10	7.19	1.29	3.60	4.38	1.17
10-081	2.22	50.72	2.61	12.68	8.41	2.20
10-161	3.37	289.10	4.13	36.14	12.98	3.45

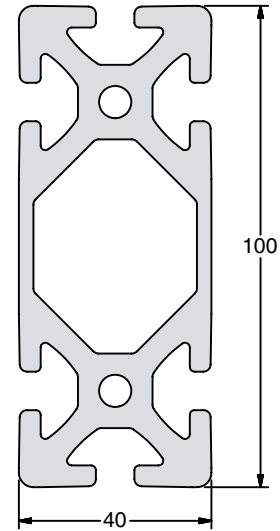
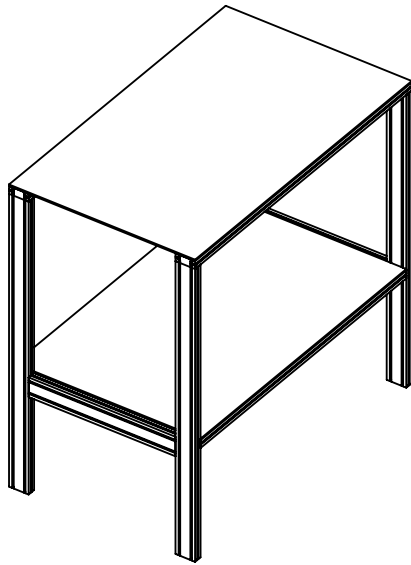
Ordering Information

Description	Unit	Part # (Clear)
Profile 16x40	Cut off max. 6m	10-016
Profile 16x80	Cut off max. 6m	10-081
*Saw Cut Needed for Cut to Length		19-001
Profile 16x160	Cut off max. 6m	10-161
*Saw Cut Needed for Cut to Length		19-003

Quick Reference for Mating Components

Fasteners		T-Nut Examples	
Butt-Fastening Set M6	20-006	M5 Roll-In Single	20-052
Flat Plate Fastening Set	20-028	M8 Roll-In Double	20-050
End Cap			
Profile 16x40	18-811		
Profile 16x80	18-812		
Profile 16x160	18-806		

100x40 and 160x28 Profiles



Application

These heavy profiles are ideal for general engineering structures such as machine bases, structural supports and mounting surfaces on fixturing applications. 11-128 is used as a carriage plate for bearing block assemblies on Linear System 14.

11-100

Technical Data

Aluminum, Clear Anodized (See Technical Data page 9 for full material and finish specifications)

Part #	I_x [cm ⁴]	I_y [cm ⁴]	W_x [cm ³]	W_y [cm ³]	Section [cm ²]	Weight [kg/m]
11-100	31.22	193.34	15.61	38.67	18.02	4.94
11-128	20.62	737.99	14.73	92.25	31.27	8.46

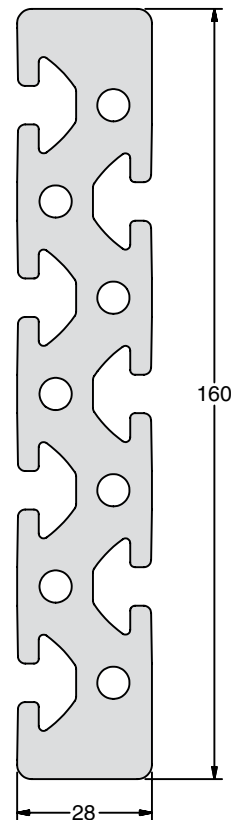
Ordering Information

Description	Unit	Part # (Clear)
Profile 40x100 Heavy	Cut off max. 6m	11-100
*Saw Cut Needed for Cut to Length		19-002
Profile 28x160	Cut off max. 6m	11-128
*Saw Cut Needed for Cut to Length		19-003

Quick Reference for Mating Components

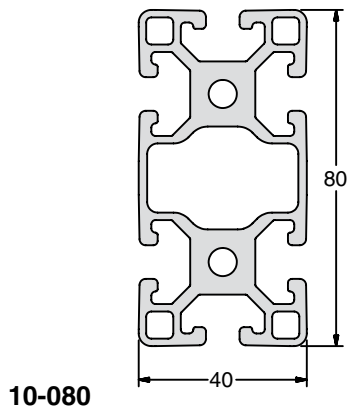
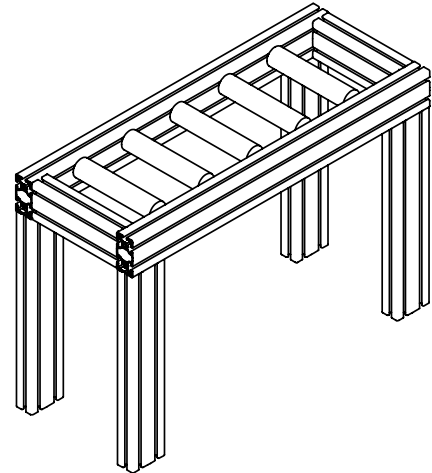
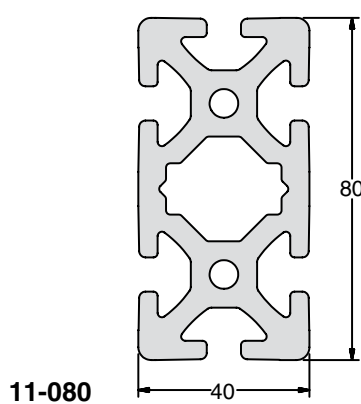
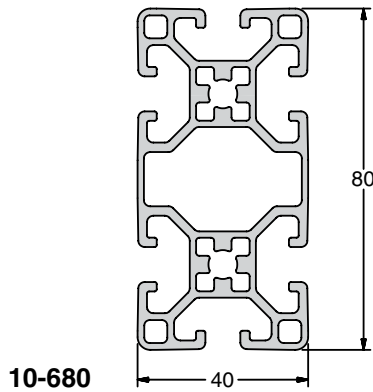
End Cap	Fasteners
160x28	Standard Fastener
18-816	Universal Fastener
	T-Slot Nuts

20-002
 20-004
 Page 82



11-128

80x40 Profiles



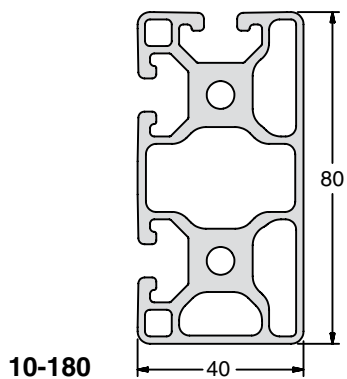
Application

Designed for applications where high strength is required. Ideal for general engineering structures such as machine frames, work stations and support structures. Profiles 10-080 and 11-080 can be used in the construction of linear slides with the IPS Roller Systems. Both profiles can also be used for compressed air piping.

Technical Data

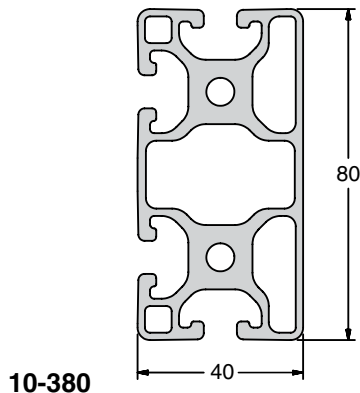
Aluminum, Clear or Black Anodized (See Technical Data page 9 for full material and finish specifications)

Part #	I_x [cm ⁴]	I_y [cm ⁴]	W_x [cm ³]	W_y [cm ³]	Section [cm ²]	Weight [kg/m]
10-680	15.30	58.78	7.65	14.70	9.10	2.46
10-080	17.23	71.56	8.62	17.89	11.49	3.18
10-180	16.61	68.92	8.14	17.15	11.16	2.83
10-380	16.77	69.20	8.21	17.30	11.28	3.06
11-080	26.97	102.65	13.48	25.66	16.74	4.58



Ordering Information

Description	Unit	Part # (Clear)	Part # (Black)
Profile 80x40 Light	Cut off max. 6m	10-680	
Profile 80x40 Standard	Cut off max. 6m	10-080	10-080B
Profile 80x40 Tri-Slot Corner	Cut off max. 6m	10-180	
Profile 80x40 Quad-Slot	Cut off max. 6m	10-380	
Profile 80x40 Heavy	Cut off max. 6m	11-080	
*Saw Cut Needed for Cut to Length		19-001	



Quick Reference for Mating Components

Fasteners

Standard Fastener (Single)	20-144
Standard Fastener	20-002

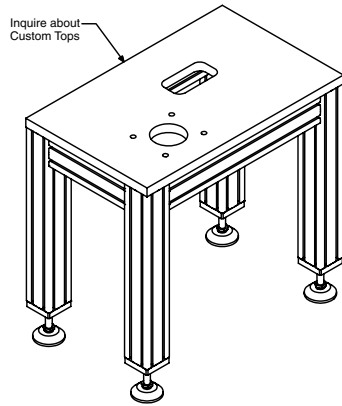
End Caps

80x40	18-814
80x40 Secured	18-914

Structural Accessories

Compressed Air Fittings	Page 176
Levelers	Page 156
Plates	Page 102
Gussets	Page 104
Linear Slides	Page 206

80x80 and 120x80 Profiles



Application

Designed for heavy duty applications and construction of linear slides with IPS roller systems, these profiles are also suitable for multiple channel compressed air piping.

Profile 11-089 can be used as a manifold for pressurized air (150 psi). A support bearing can be pressed into the center diameter to hold shafts or spindles for rotary applications. This diameter can also be used to house electrical or air lines.

Technical Data

Aluminum, Clear or Black Anodized (See Technical Data page 9 for full material and finish specifications)

Part #	I_x [cm ⁴]	I_y [cm ⁴]	W_x [cm ³]	W_y [cm ³]	Section [cm ²]	Weight [kg/m]
10-088	136.85	136.85	34.21	34.21	19.98	5.45
11-088	186.36	186.37	46.59	46.59	26.23	7.02
11-089	223.90	223.90	55.97	53.97	37.39	9.83
11-122	274.14	738.22	68.53	119.29	39.79	10.82

Ordering Information

Description	Unit	Part # (Clear)	Part # (Black)
Profile 80x80 Standard	Cut off max. 6m	10-088	10-088B
Profile 80x80 Heavy	Cut off max. 6m	11-088	
*Saw Cut Needed for Cut to Length		19-002	19-002
Profile 80x80 Extra Heavy	Cut off max. 6m	11-089**	
Profile 80x120 Heavy	Cut off max. 6m	11-122	
*Saw Cut Needed for Cut to Length		19-003	

Quick Reference for Mating Components

Fasteners

Standard Fastener	20-002
Universal Fastener	20-004

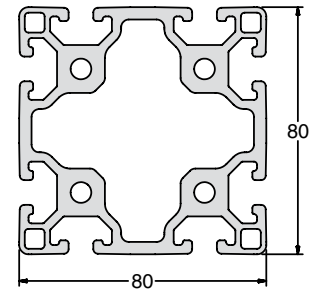
End Caps

80x80	18-815
80x80 Secured	18-915
80x120	18-841

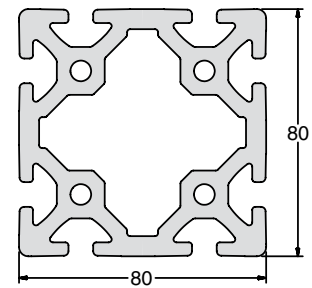
Structural Accessories

Compressed Air Fittings	Page 176
Plates	Page 102
Gussets	Page 104
Linear Slides	Page 206

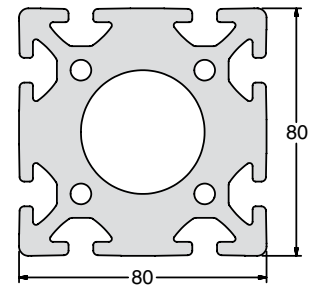
** Requires single ear fastener 20-144 / 25-014



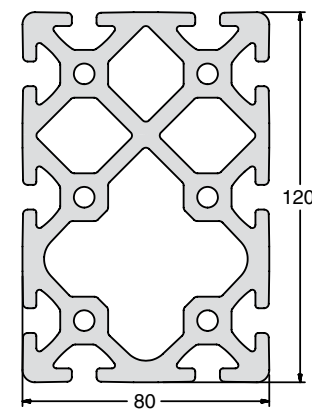
10-088



11-088

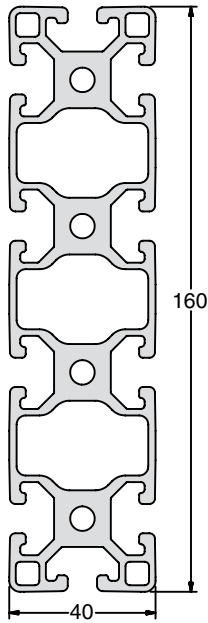


11-089

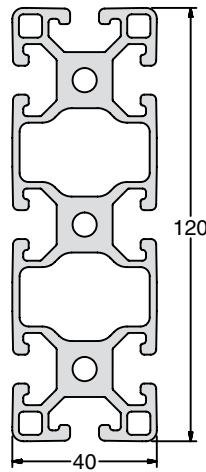


11-122

120x40 and 160x40 Profiles



10-164



10-120

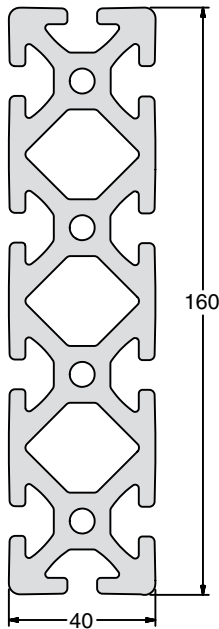
Application

Designed for applications such as fixturing, vertical structural support and headers for bearing block assemblies on IPS Linear System 14. These profiles are also suitable for multiple channel compressed air piping.

Technical Data

Aluminum, Clear Anodized (See Technical Data page 9 for full material and finish specifications)

Part #	I _x [cm ⁴]	I _y [cm ⁴]	W _x [cm ³]	W _y [cm ³]	Section [cm ²]	Weight [kg/m]
10-120	25.04	225.56	12.52	37.59	16.66	4.35
10-164	32.84	368.96	16.42	46.12	21.23	5.80
11-140	53.10	738.07	26.55	92.26	32.17	8.72



11-140

Ordering Information

Description	Unit	Part # (Clear)
Profile 120x40 Standard	Cut off max. 6m	10-120
Profile 160x40 Standard	Cut off max. 6m	10-164
Profile 160X40 Heavy	Cut off max. 6m	11-140
*Saw Cut Needed for Cut to Length		19-003

Quick Reference for Mating Components

Fasteners

Standard Fastener	20-002
Universal Fastener	20-004

End Caps

120x40	18-840
160x40	18-817

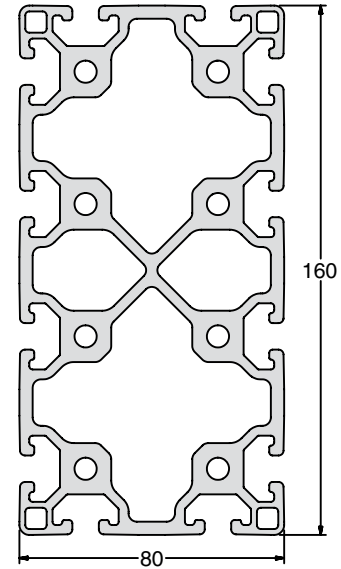
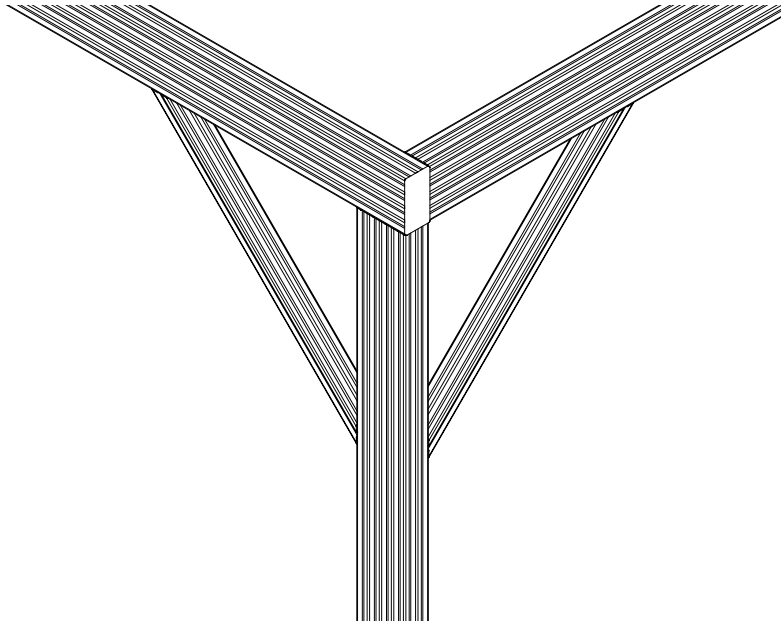
T-Nut Examples

M5 Roll-In Single	20-052
M8 Roll-In Double	20-050

Structural Accessories

Compressed Air Fittings	Page 176
Machining & Processing	Page 231

160x80 Profiles



10-160

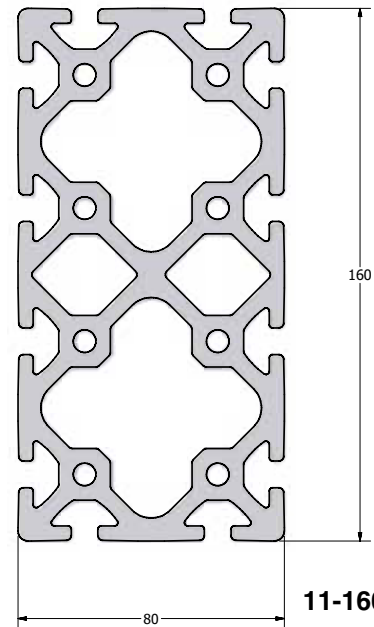
Application

Designed for very high load or wide span applications and construction of linear slides with IPS Roller Systems. These high strength profiles are also suitable for multiple channel compressed air piping.

Technical Data

Aluminum, Clear Anodized (See Technical Data page 9 for full material and finish specifications)

Part #	I_x [cm ⁴]	I_y [cm ⁴]	W_x [cm ³]	W_y [cm ³]	Section [cm ²]	Weight [kg/m]
10-160	268.68	738.22	67.17	92.28	37.76	10.29
11-160	343.37	1106.92	85.84	138.37	48.23	13.07



11-160

Ordering Information

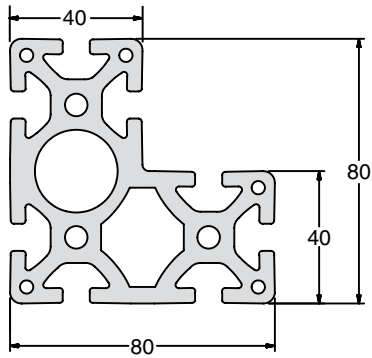
Description	Unit	Part # (Clear)
Profile 160x80 Standard	Cut off max. 6m	10-160
Profile 160x80 Heavy	Cut off max. 6m	11-160
*Saw Cut Needed for Cut to Length		19-003

Quick Reference for Mating Components

Fasteners		Structural Accessories	
Standard Fastener	20-002	Levelers	Page 156
Universal Fastener	20-004	Casters	Page 167
End Caps		Plates	Page 102
160x80	18-818	Gussets	Page 104



Heavy Corner Profile



11-084



Application

Designed for very high load or wide span applications and construction corner posts in structures or machine assemblies. This high strength profile is also suitable for multiple channel compressed air piping.

Technical Data

Aluminum, Clear Anodized (See Technical Data page 9 for full material and finish specifications)

Part #	I _x [cm ⁴]	I _y [cm ⁴]	W _x [cm ³]	W _y [cm ³]	Section [cm ²]	Weight [kg/m]
11-084	127.47	128.57	27.62	27.66	23.23	6.27

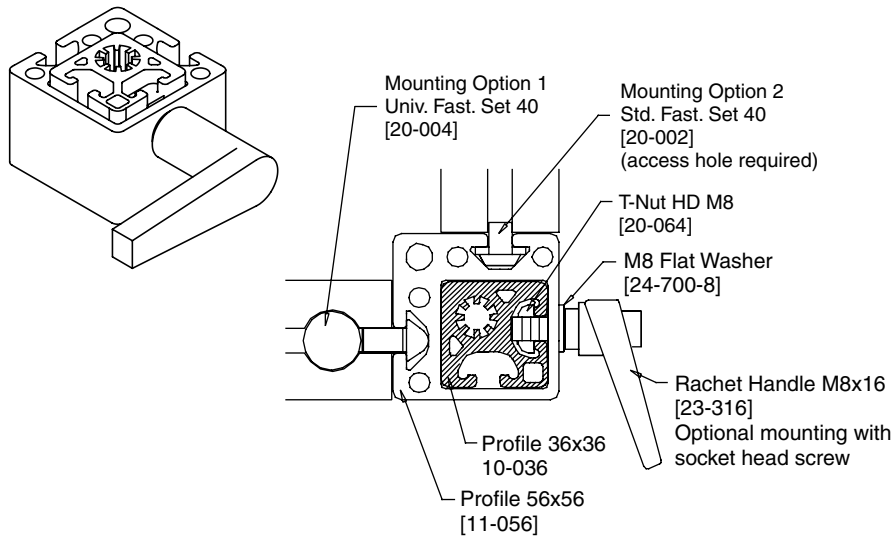
Ordering Information

Description	Unit**	Part # (Clear)
Profile 80x80x40 Corner Heavy	Each	11-084
*Saw Cut Needed for Cut to Length		19-003

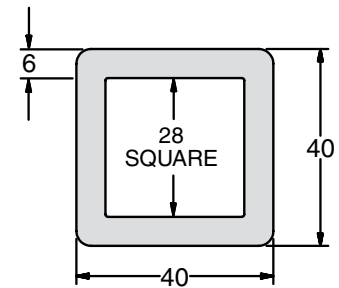
Quick Reference for Mating Components

Fasteners		T-Nut Examples	
Standard Fastener	20-002	M6 Roll-In	20-056
Universal Fastener	20-004	M8 Roll-In	20-058
		M8/40 Double Roll-In	20-049
		T-Slot Nut, HD M8	20-064

** Available in 3m bar only



Post and Square Profiles



11-540

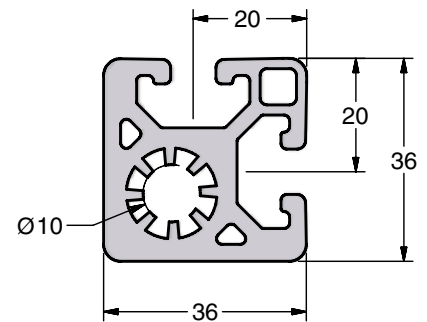
Application

These profiles are engineered as support elements for a variety of applications including table bases, frames and machine guarding. Profile 10-036 fits into the cavity of 11-056 to create a telescoping post for work stations or tables. This cavity can also be used as a channel for counterweights.

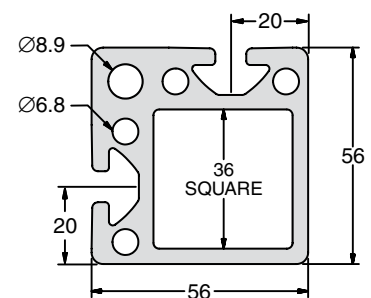
Technical Data

Aluminum, Clear Anodized (See Technical Data page 9 for full material and finish specifications)

Part #	I _x [cm ⁴]	I _y [cm ⁴]	W _x [cm ³]	W _y [cm ³]	Section [cm ²]	Weight [kg/m]
11-540	15.78	15.78	7.89	7.89	7.98	2.16
10-036	8.55	8.55	4.32	4.32	7.18	1.94
11-056	46.09	46.09	14.98	14.98	13.17	3.53



10-036



11-056

Ordering Information

Description	Unit	Part # (Clear)
Profile 40x40 Heavy Square	Cut off max. 6m	11-540
Profile Post 36x36	Cut off max. 6m	10-036
Profile Post 56x56	Cut off max. 6m	11-056
*Saw Cut Needed for Cut to Length		19-001

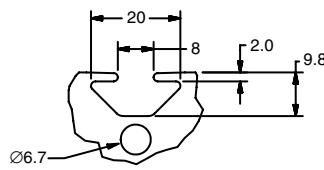
Quick Reference for Mating Components

End Caps		Structural Accessories	
40x40 (11-540 only)	18-805	Ratchet Handle	23-316
56x56 Post Profile	18-819	Flat Plate Fastener	20-028

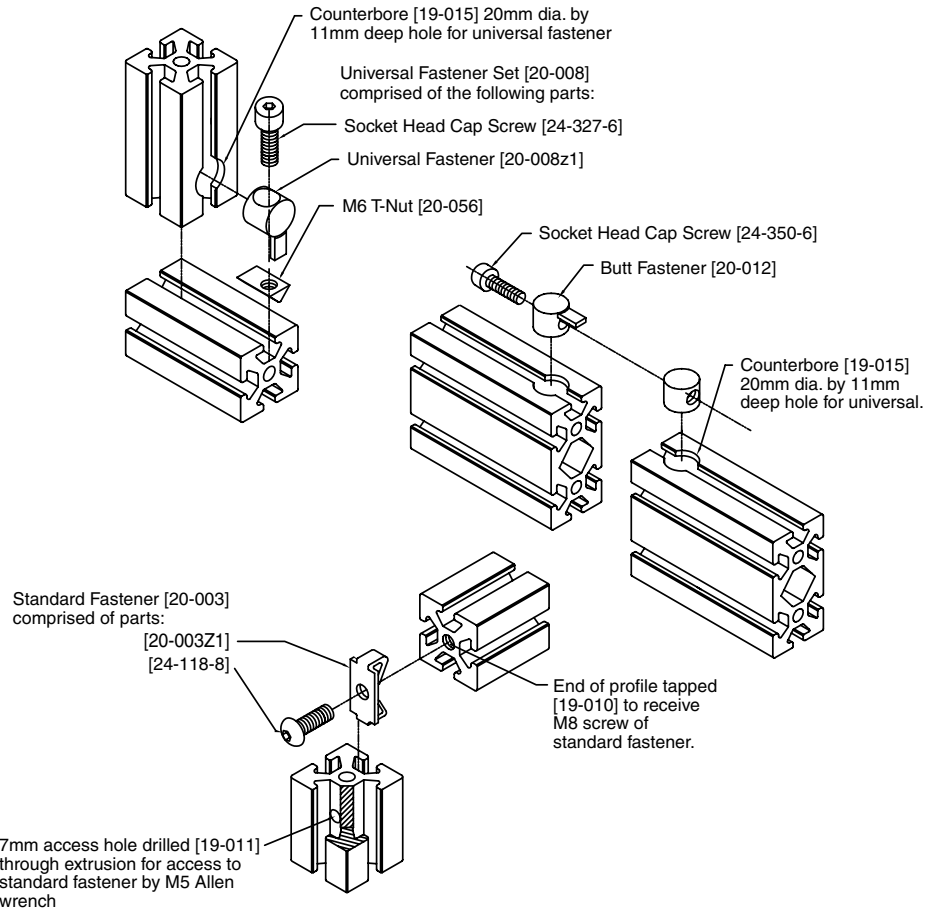
30 Series Profiles

Part #	Description	Moment of Inertia		Section Modulus		Section [cm ²]	Weight [kg/m]	Cat. Page
		I _x [cm ⁴]	I _y [cm ⁴]	W _x [cm ³]	W _y [cm ³]			
12-030	Profile 30x30	3.15	3.15	2.10	2.10	3.33	0.90	33
12-033	Profile 30x30 Quarter Round	2.48	2.48	1.51	1.51	3.13	0.85	34
12-034	Profile 30x30 Bi-Slot Corner	3.52	3.51	2.24	2.23	3.69	1.00	33
12-060	Profile 30x60	6.12	21.20	4.08	7.07	6.19	1.68	35

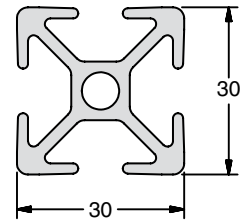
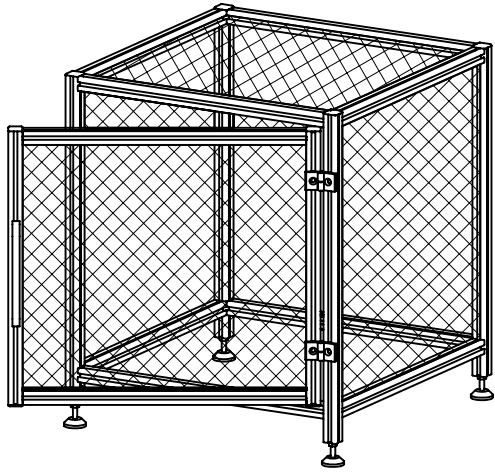
T-Slot Detail



Service



30x30 Profiles



12-030

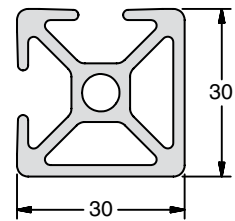
Application

Designed for general structures, safety guards and partition frames, light duty enclosures and industrial peripherals. Profile 12-034 has closed faces on two perpendicular sides making it ideal for constructing smooth corners.

Technical Data

Aluminum, Clear Anodized (See Technical Data page 9 for full material and finish specifications)

Part #	I_x [cm ⁴]	I_y [cm ⁴]	W_x [cm ³]	W_y [cm ³]	Section [cm ²]	Weight [kg/m]
12-030	3.15	3.15	2.10	2.10	3.33	0.90
12-034	3.52	3.51	2.24	2.23	3.69	1.00



12-034

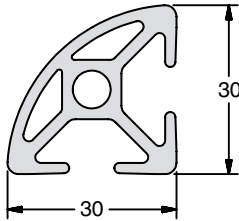
Ordering Information

Description	Unit	Part # (Clear)
Profile 30x30	Cut off max. 6m	12-030
Profile 30x30 Bi-Slot Corner	Cut off max. 6m	12-034
*Saw Cut Needed for Cut to Length		19-001

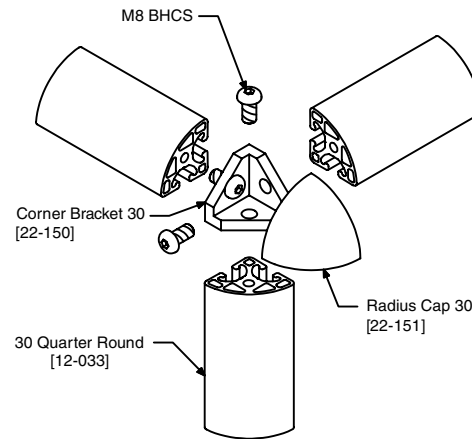
Quick Reference for Mating Components

Fasteners		Structural Accessories	
Standard Fastener	20-003	Corner Bracket 30	22-150
Universal Fastener	20-008	Connector Cap 30 (Sq)	22-152
End Caps		Leveling Foot	21-001-30
30x30	18-803	T-Slot Nuts	Page 82

30x30 Quarter Round



12-033



Application

Designed with a quarter round smooth face and T-Slots, this profile is particularly useful for engineering frames, shelving or enclosures where a radius edge is aesthetically or functionally desirable.

Technical Data

Aluminum, Clear Anodized (See Technical Data page 9 for full material and finish specifications)

Part #	I_x [cm ⁴]	I_y [cm ⁴]	W_x [cm ³]	W_y [cm ³]	Section [cm ²]	Weight [kg/m]
12-033	2.48	2.48	1.51	1.51	3.13	0.85

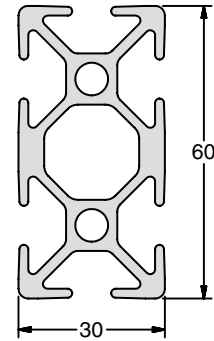
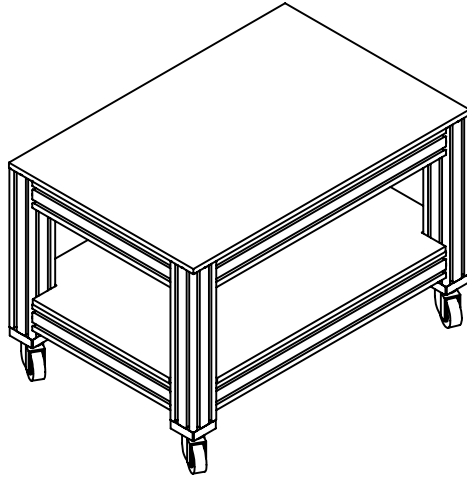
Ordering Information

Description	Unit	Part #
Profile 30x30 Quarter Round	Cut off max. 6m	12-033
*Saw Cut Needed for Cut to Length		19-001

Quick Reference for Mating Components

Fasteners		Corner Connector Caps	Pg. 98
Flat Plate Fastener	20-028	Connector Cap, Radius	22-151
Miter Connector 30	20-024	Tap Profile End for M8	19-010
Corner Bracket 30	22-150	45° Miter Cut	19-104

60x30 Profiles



12-060

Application

These profiles are ideal for general use structures, safety guards and partition frames, light duty enclosures and industrial peripherals.

Technical Data

Aluminum, Clear Anodized (See Technical Data page 9 for full material and finish specifications)

Part #	I_x [cm ⁴]	I_y [cm ⁴]	W_x [cm ³]	W_y [cm ³]	Section [cm ²]	Weight [kg/m]
12-060	6.12	21.20	4.08	7.07	6.19	1.68

Ordering Information

Description	Unit	Part #
Profile 30x60	Cut off max. 6m	12-060
*Saw Cut Needed for Cut to Length		19-001

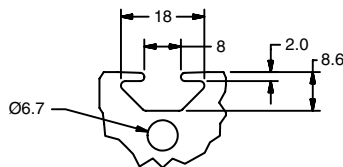
Quick Reference for Mating Components

Fasteners		T-Nut Examples	
Standard Fastener	20-003	M6 Roll-In	20-056
Universal Fastener	20-008	M8 Roll-In	20-058
End Caps		M8/40 Double Roll-In	20-049
30x60	18-863	T-Slot Nut, HD M8	20-064

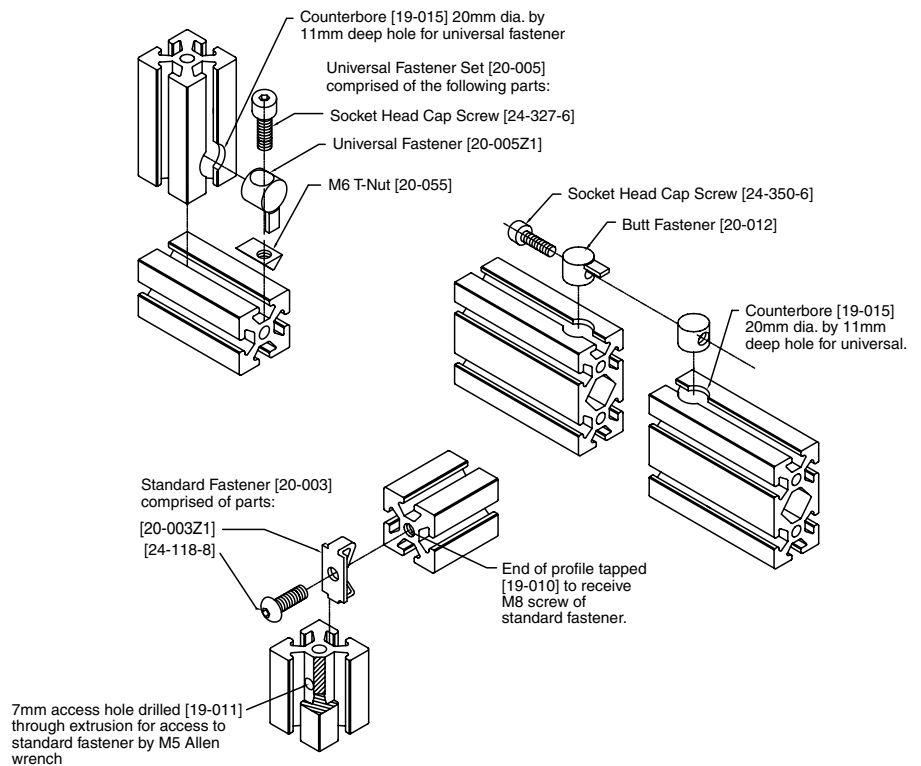
28 Series Profiles

Part #	Description	Moment of Inertia		Section Modulus		Section [cm ²]	Weight [kg/m]	Cat. Page
		I _x [cm ⁴]	I _y [cm ⁴]	W _x [cm ³]	W _y [cm ³]			
12-028	Profile 28x28 Quad-Slot	2.37	2.27	1.70	1.62	2.96	0.81	37
12-428	Profile 28x56 Open Slot	4.65	16.42	3.32	5.86	5.60	1.51	37
12-056	Profile 56x56 Light	30.44	30.44	10.87	10.87	8.87	2.40	37
12-128	Profile 28x28 Tri-Slot	2.64	2.35	1.78	1.68	3.12	0.84	38
12-228	Profile 28x28 Bi-Slot	2.69	2.69	1.83	1.83	3.32	0.90	38
12-328	Profile 28x28 Bi-Slot Mid-Frame	2.41	3.00	1.72	2.14	3.32	0.90	38
12-044	Profile 28x28 45 Deg.	1.97	1.97	1.28	1.28	2.87	0.78	39
12-628	Profile 28x56 Bi-Slot	5.92	18.01	4.23	6.43	6.36	1.72	40
12-728	Profile 28x56 Quad-Slot	5.23	17.10	3.53	6.11	5.96	1.62	40

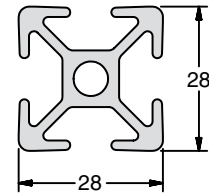
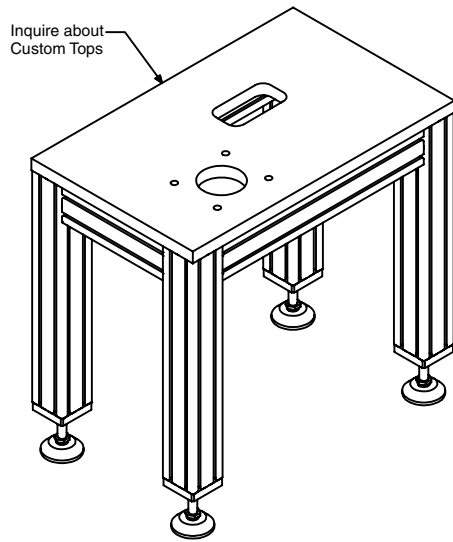
T-Slot Dimensions



Service



28x28, 56x28 and 56x56 Slotted Profiles



12-028

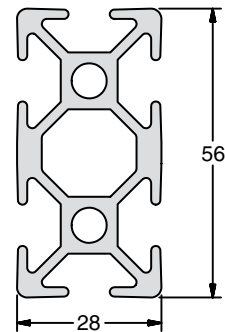
Application

These profiles are designed with T-slot faces on all four sides. They are useful for constructing safety guards, partition frames, light duty enclosures and industrial peripherals.

Technical Data

Aluminum, Clear Anodized (See Technical Data page 9 for full material and finish specifications)

Part #	I_x [cm ⁴]	I_y [cm ⁴]	W_x [cm ³]	W_y [cm ³]	Section [cm ²]	Weight [kg/m]
12-028	2.37	2.27	1.70	1.62	2.96	0.81
12-428	4.65	16.42	3.32	5.86	5.60	1.51
12-056	30.44	30.44	10.87	10.87	8.87	2.40



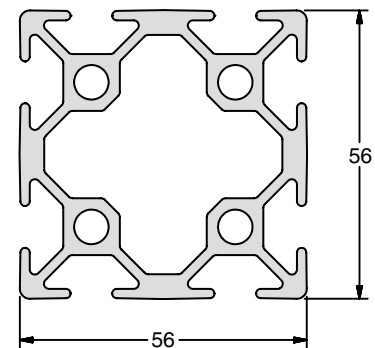
12-428

Ordering Information

Description	Unit	Part #
Profile 28x28 Quad-Slot	Cut off max. 6m	12-028
Profile 28x56 Open Slot	Cut off max. 6m	12-428
Profile 56x56	Cut off max. 6m	12-056
*Saw Cut Needed for Cut to Length		19-001

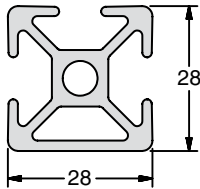
Quick Reference for Mating Components

Fasteners		T-Nut Examples	
Standard Fastener	20-003	Roll-In Single M6	20-055
Universal Fastener	20-005	Roll-In Single M8	20-057
End Caps		Economy Standard M6	20-090
28x28	18-808	Economy Offset M6	20-190
28x56	18-809	Economy Standard M8	20-091
		Economy Offset ¼-20	20-193

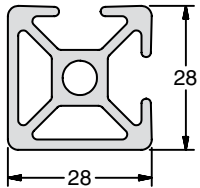


12-056

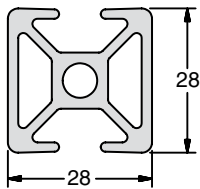
28x28 Closed Face Square Profiles



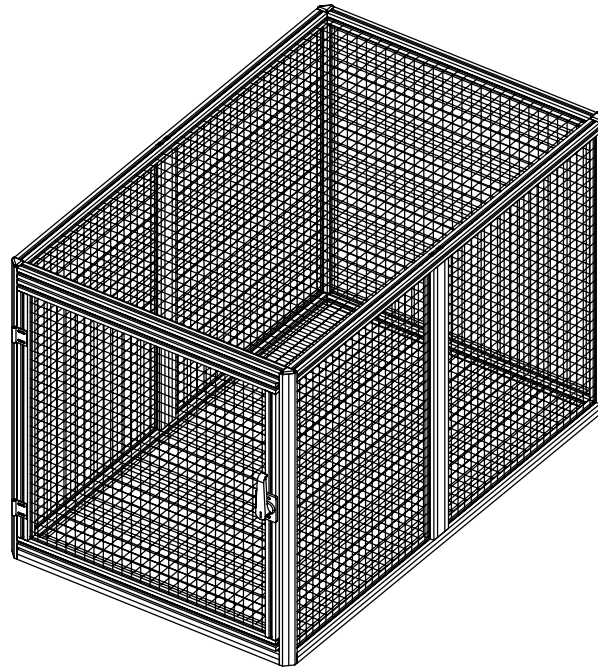
12-128



12-228



12-328



Application

Designed with various closed faces, these profiles provide efficient fastening in a variety of configurations while retaining a smooth exterior for an aesthetically clean look.

Technical Data

Aluminum, Clear Anodized (See Technical Data page 9 for full material and finish specifications)

Part #	I_x [cm ⁴]	I_y [cm ⁴]	W_x [cm ³]	W_y [cm ³]	Section [cm ²]	Weight [kg/m]
12-128	2.64	2.35	1.78	1.68	3.12	0.84
12-228	2.69	2.69	1.83	1.83	3.32	0.90
12-328	2.41	3.00	1.72	2.14	3.32	0.90

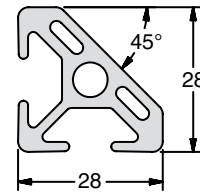
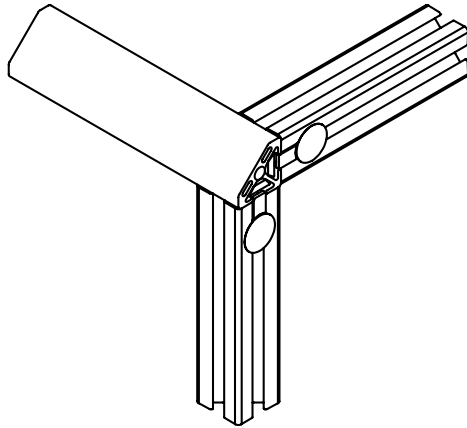
Ordering Information

Description	Unit	Part #
Profile 28x28 Tri-Slot	Cut off max. 6m	12-128
Profile 28x28 Bi-Slot	Cut off max. 6m	12-228
Profile 28x28 Bi-Slot Mid-Frame	Cut off max. 6m	12-328
*Saw Cut Needed for Cut to Length		19-001

Quick Reference for Mating Components

Fasteners		End Caps	
Flat Plate Fastening Set	20-028	28x28	18-808
Universal Fastening Set	20-005		
Standard Fastener	20-003		

28x28 Angled Closed Face Profile



12-044

Application

Designed with an angled closed face and T-Slots on two sides. This profile is ideal for applications where perpendicular surfaces are not desired.

Technical Data

Aluminum, Clear Anodized (See Technical Data page 9 for full material and finish specifications)

Part #	I_x [cm ⁴]	I_y [cm ⁴]	W_x [cm ³]	W_y [cm ³]	Section [cm ²]	Weight [kg/m]
12-044	1.97	1.97	1.28	1.28	2.87	0.78

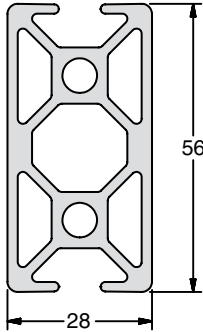
Ordering Information

Description	Unit	Part #
Profile 28x28 45°	Cut off max. 6m	12-044
*Saw Cut Needed for Cut to Length		19-001

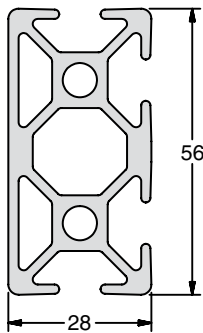
Quick Reference for Mating Components

Fasteners		T-Nut Examples	
Flat Plate Fastening Set	20-028	Roll-In Single M6	20-055
End Caps		Roll-In Single M8	20-057
28x28-45°	18-844	Economy Standard M6	20-090

56x28 Closed Face Profiles



12-628



12-728

Application

Designed with various closed faces, these profiles provide efficient fastening in a variety of configurations while retaining a smooth exterior for an aesthetically clean look.

Technical Data

Aluminum, Clear Anodized (See Technical Data page 9 for full material and finish specifications)

Part #	I_x [cm ⁴]	I_y [cm ⁴]	W_x [cm ³]	W_y [cm ³]	Section [cm ²]	Weight [kg/m]
12-628	5.92	18.01	4.23	6.43	6.36	1.72
12-728	5.23	17.10	3.53	6.11	5.96	1.62

Ordering Information

Description	Unit	Part #
Profile 28x56 Bi-Slot	Cut off max. 6m	12-628
Profile 28x56 Quad-Slot	Cut off max. 6m	12-728
*Saw Cut Needed for Cut to Length		19-001

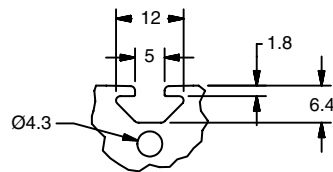
Quick Reference for Mating Components

Fasteners	End Caps
Flat Plate Fastening Set 20-028	28x56 18-809
Universal Fastening Set 20-005	
Standard Fastener 20-003	

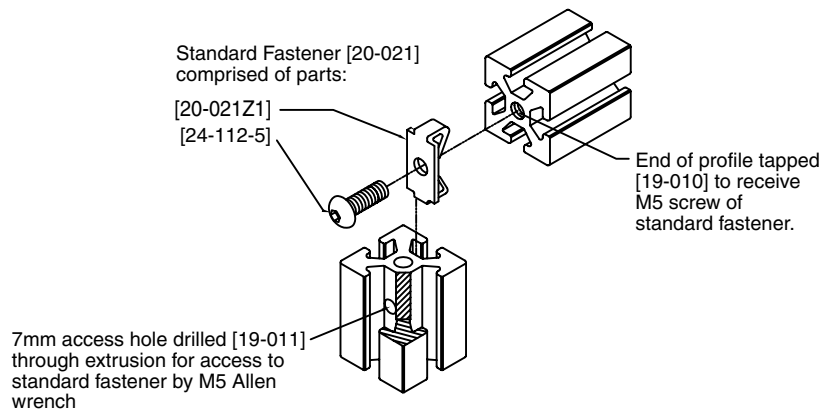
20 Series Profiles

Part #	Description	Moment of Inertia		Section Modulus		Section [cm ²]	Weight [kg/m]	Cat. Page
		I _x [cm ⁴]	I _y [cm ⁴]	W _x [cm ³]	W _y [cm ³]			
12-120	Profile 20x10	0.12	0.53	0.22	0.53	1.29	0.35	42
12-020	Profile 20x20	0.73	0.73	0.73	0.73	1.80	0.52	42
12-040	Profile 40x40 20 Series	8.74	8.74	4.37	4.37	4.83	1.32	43
12-124	Profile 20x40	1.33	5.03	1.33	2.52	3.16	0.86	42

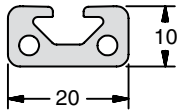
T-Slot Detail



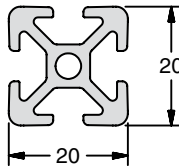
Service



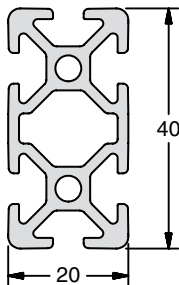
20x10, 20x20 & 40x20 Profiles



12-120



12-020



12-124

Application

20 Series profiles are designed for light duty enclosures and fixtures. They are also useful in building light accessories and components on workstations or assembly tables. The 5mm T-slot requires 20 Series hardware.

Technical Data

Aluminum, Clear Anodized (See Technical Data page 9 for full material and finish specifications)

Part #	I_x [cm ⁴]	I_y [cm ⁴]	W_x [cm ³]	W_y [cm ³]	Section [cm ²]	Weight [kg/m]
12-120	0.12	0.53	0.22	0.53	1.29	0.35
12-020	0.73	0.73	0.73	0.73	1.80	0.52
12-124	1.33	5.03	1.33	2.52	3.16	0.86

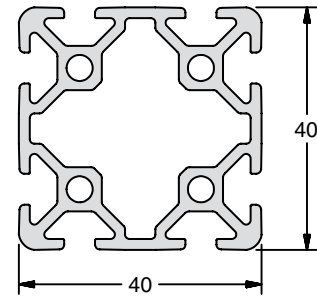
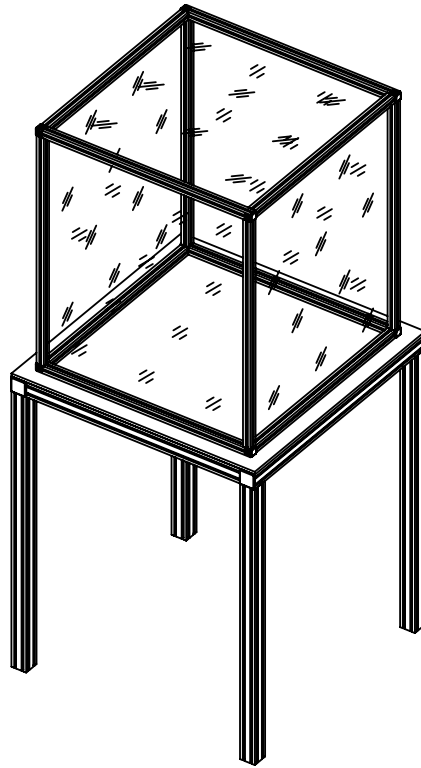
Ordering Information

Description	Unit	Part # (Clear)
Profile 20x10	Cut off max. 3m	12-120
Profile 20x20	Cut off max. 3m	12-020
Profile 20x40	Cut off max. 3m	12-124
*Saw Cut Needed for Cut to Length		19-001

Quick Reference for Mating Components

Fasteners		End Caps	
Standard Fastener	20-021	20x10	18-830
		20x20	18-802
		20x40	18-831

40x40 Profile



12-040

Application

20 Series profiles are designed for light duty enclosures and fixtures. They are also useful in building light accessories and components on workstations or assembly tables. The 5mm T-Slot requires 20 Series hardware.

Technical Data

Aluminum, Clear Anodized (See Technical Data page 9 for full material and finish specifications)

Part #	I _x [cm ⁴]	I _y [cm ⁴]	W _x [cm ³]	W _y [cm ³]	Section [cm ²]	Weight [kg/m]
12-040	8.74	8.74	4.37	4.37	4.83	1.32

Ordering Information

Description	Unit	Part # (Clear)
Profile 40x40, 20 Series	Cut off max. 4m	12-040
*Saw Cut Needed for Cut to Length		19-001

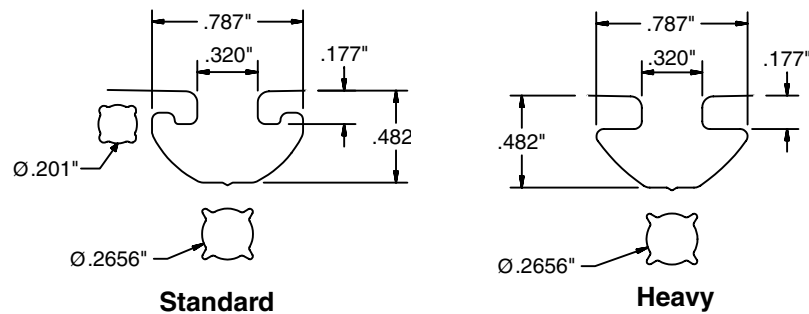
Quick Reference for Mating Components

Fasteners		End Caps	
Standard Fastener	20-021	40x40	18-832
T-Nuts			
Roll-In Single M4	20-044		
Roll-In Single M5	20-045		

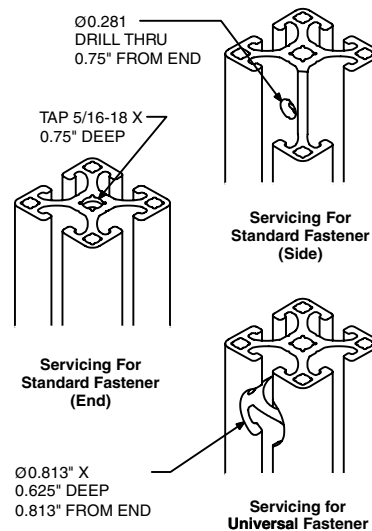
1.5" Series

Part #	Description	Moment of Inertia		Section Modulus		Section [cm ²]	Weight [kg/m]	Page
		I _x [cm ⁴]	I _y [cm ⁴]	W _x [cm ³]	W _y [cm ³]			
10-1515	1.5" x 1.5" Standard Profile	8.49	8.49	4.46	4.46	6.19	1.70	45
10-1530	3" x 1.5" Standard Profile	15.15	61.85	7.95	16.23	10.38	2.81	48
10-1543	1.5" Quarter Round Profile	6.16	6.16	2.90	2.90	5.48	1.47	47
10-1560	6" x 1.5" Standard Profile	27.97	420.89	14.68	55.24	18.33	6.98	50
10-1591	1.5" x 1.5" Mono-Slot Profile	8.53	8.70	4.47	4.57	6.20	1.68	46
10-1592	1.5" x 1.5" Bi-Slot Corner Profile	8.62	8.62	4.51	4.51	3.24	1.68	46
10-1593	1.5" x 1.5" Tri--Slot Profile	8.66	8.49	4.53	4.46	6.22	1.69	46
10-1594	1.5" x 1.5" Bi-Slot Midframe Profile	8.78	8.45	4.61	4.44	6.21	1.68	46
10-3030	3" x 3" Standard Profile	113.38	113.38	29.76	29.76	17.42	4.72	49
11-1515	1.5" x 1.5" Heavy Profile	11.24	11.24	5.90	5.90	7.74	2.10	45
11-1530	3" x 1.5" Heavy Profile	21.10	78.79	11.08	20.68	14.00	3.72	48
11-3030	3" x 3" Heavy Profile	146.43	146.43	38.43	38.43	22.61	6.04	49
12-1515	1.5" x 1.5" Light Profile	7.08	7.08	3.72	3.72	4.82	1.31	45
12-1530	3" x 1.5" Light Profile	13.10	49.63	6.88	13.03	8.43	2.28	48

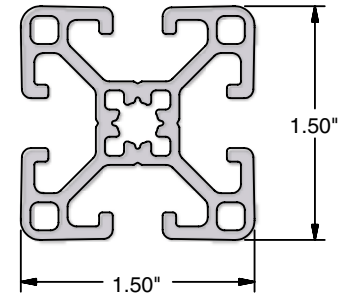
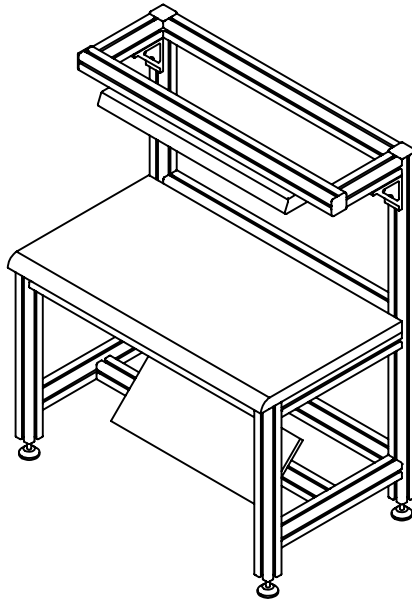
T-Slot Detail



Service



**1.5" x 1.5"
 Slotted Profiles**



12-1515

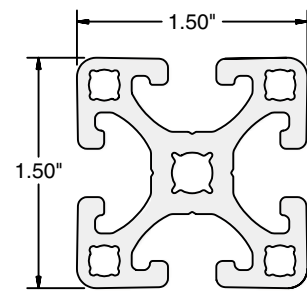
Application

10-1515 and 11-1515 are ideal general purpose extrusions for guards, enclosures, work stations, tool carts and smaller machine frames. T-slots on four sides allows for effortless mounting of accessories directly onto the structure without additional machining.

Technical Data

Aluminum, Clear Anodized (See Technical Data page 9 for full material and finish specification)

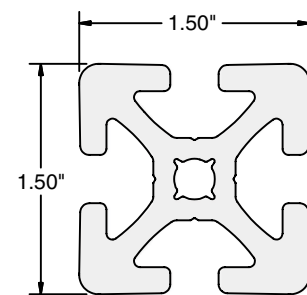
Part #	I_x [cm ⁴]	I_y [cm ⁴]	W_x [cm ³]	W_y [cm ³]	Section [cm ²]	Weight [kg/m]
10-1515	8.49	8.49	4.46	4.46	6.19	1.70
11-1515	11.24	11.24	5.90	5.90	7.74	2.10
12-1515	7.08	7.08	3.72	3.72	4.82	1.31



10-1515

Ordering Information

Description	Unit	Part #
1.5" x 1.5" Light Profile	Cut off max 240 in	12-1515
1.5" x 1.5" Standard Profile	Cut off max. 240 in	10-1515
1.5" x 1.5" Heavy Profile	Cut off max. 240 in	11-1515
* Saw cut needed for Cut to Length		19-001



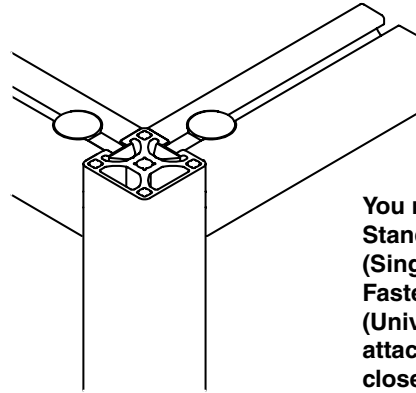
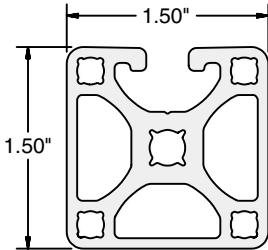
11-1515

Quick Reference for Mating Components

Fasteners		T-Nuts	
1.5" Standard Fastener	25-003	1/4-20 Roll-In	25-001
1.5" Single Fastener	25-014	5/16-18 Roll-In	25-002
1.5" Universal Fastener	25-004	5/16-18 Double Roll-In	25-041
End Caps		1/4-20 Economy	20-083
1.5" x 1.5"	18-1515	5/16-18 Economy	20-082

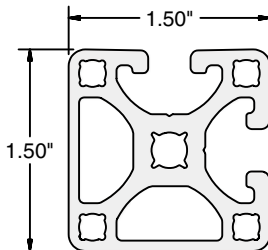


1.5" x 1.5" Closed Face Profiles



You must use 25-022 (Flat Standard Fastener), 25-014 (Single Ended Standard Fastener) or 25-004 (Universal Fastener) when attaching to the end of the closed slot profiles (as shown).

10-1591



Application

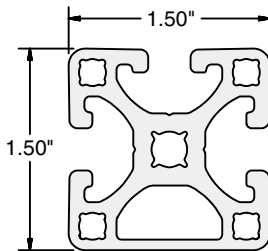
These profiles are designed with various closed faces. They are particularly useful when a smooth appearance is desired. The smooth surfaces are ideal for clean room, packaging, medical and pharmaceutical applications. The option of different T-slotted faces is ideal for fastening the profiles while retaining a smooth exterior to create the most aesthetic appearance.

Technical Data

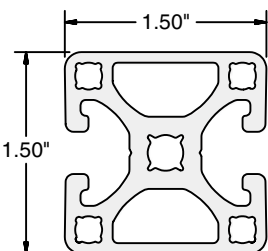
Aluminum, Clear Anodized (See Technical Data page 9 for full material and finish specification)

Part #	I_x [cm ⁴]	I_y [cm ⁴]	W_x [cm ³]	W_y [cm ³]	Section [cm ²]	Weight [kg/m]
10-1591	8.53	8.70	4.47	4.57	6.20	1.68
10-1592	8.62	8.62	4.51	4.51	6.24	1.68
10-1593	8.66	8.49	4.53	4.46	6.22	1.69
10-1594	8.78	8.45	4.61	4.44	6.21	1.68

10-1592



10-1593



10-1594

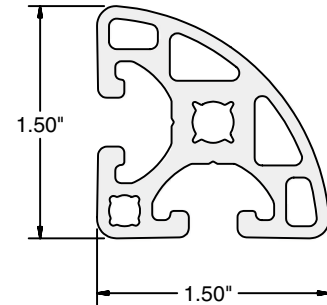
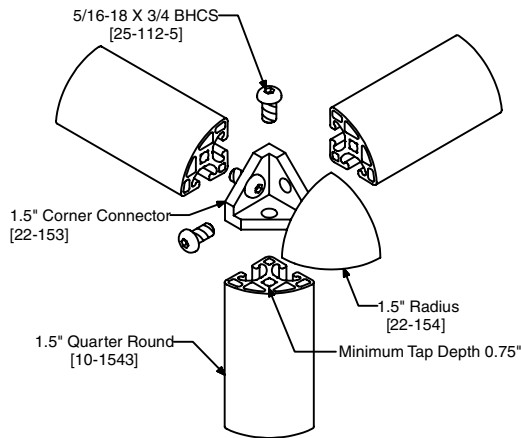
Ordering Information

Description	Unit	Part #
1.5" x 1.5" Mono Slot Profile	Cut off max. 240 in	10-1591
1.5" x 1.5" Bi-Slot Corner Profile	Cut off max. 240 in	10-1592
1.5" x 1.5" Tri-Slot Profile	Cut off max. 240 in	10-1593
1.5" x 1.5" Bi-Slot Midframe Profile	Cut off max. 240 in	10-1594
* Saw cut needed for Cut to Length		19-001

Quick Reference for Mating Components

Fasteners		Structural Accessories	
1.5" Flat Standard Fastener	25-022	Panels	pg 112
1.5" Single Fastener	25-014	Hinges	pg 138
1.5" Universal Fastener	25-004	Catches	pg 150
End Caps		Gussets	pg 104
1.5" x 1.5"	18-1515		

1.5" x 1.5" Quarter Round Profile



10-1543

Application

This profile is designed with curved surfaces while retaining T-slotted surfaces for connecting. This is particularly useful for rounding or smoothing off corners of structures where ergonomics apply. The smooth surfaces are ideal for clean room, medical and pharmaceutical applications.

Technical Data

Aluminum, Clear Anodized (See Technical Data page 9 for full material and finish Specification)

Part #	I_x [cm ⁴]	I_y [cm ⁴]	W_x [cm ³]	W_y [cm ³]	Section [cm ²]	Weight [kg/m]
10-1543	6.16	6.16	2.90	2.90	5.48	1.47

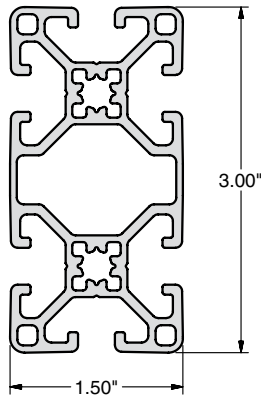
Ordering Information

Description	Unit	Part #
1.5" Quarter Round Profile	Cut off max. 240 in	10-1543
* Saw Cut Needed for Cut to length		19-001

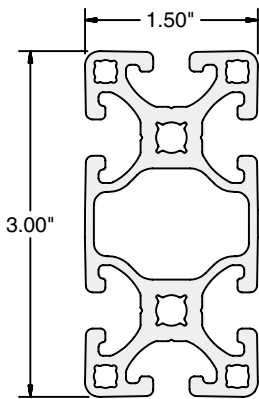
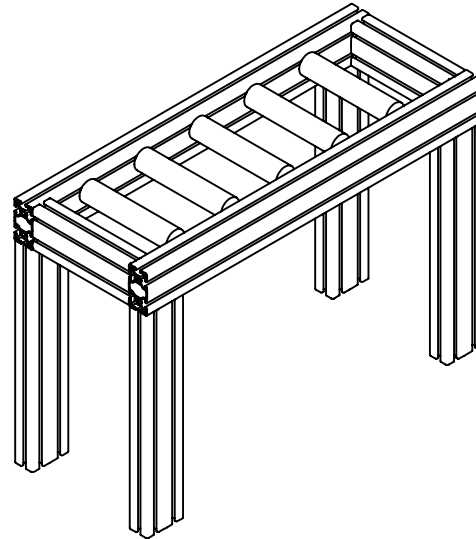
Quick Reference for Mating Components

Fasteners		End Caps	
1.5" Standard Fastener	25-003	1.5" Quarter (for 10-1543)	18-1543
1.5" Single End Standard	25-014	1.5" Radius	
1.5" Universal Fastener	25-004	(for Corner Connector)	22-154
Corner Connector			
1.5" Corner Connector	22-153		

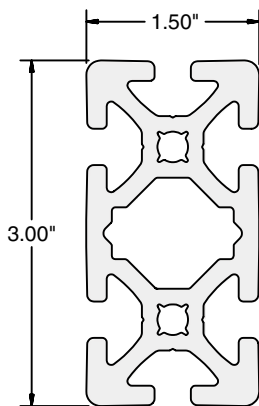
3" x 1.5" Profiles



12-1530



10-1530



11-1530

Application

Profiles 10-1530 and 11-1530 are ideal general purpose extrusions for guards, enclosures, work stations, tool carts and machine frames. They are designed with a high inertial strength in the 'y' axis. This allows higher structural integrity to create more stable and rigid structures. T-slots on four sides allow for effortless mounting of accessories directly onto the structure without additional machining.

Technical Data

Aluminum, Clear Anodized (See Technical Data page 9 for full material and finish Specification)

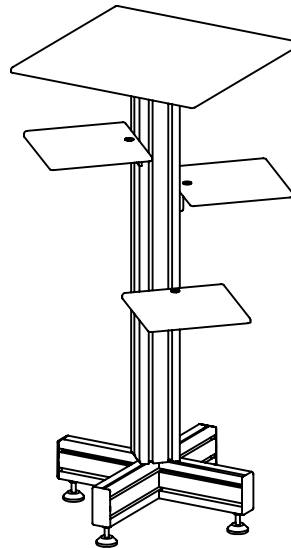
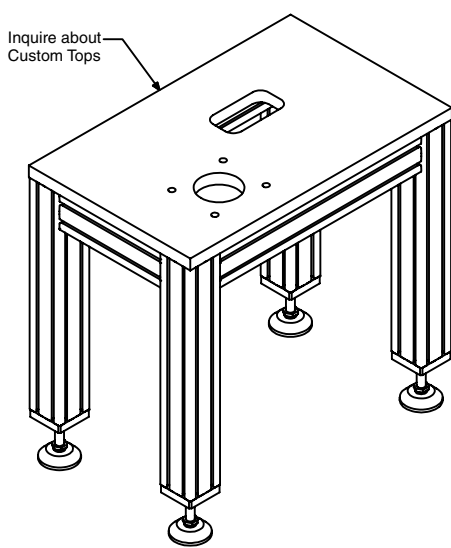
Part #	I_x [cm ⁴]	I_y [cm ⁴]	W_x [cm ³]	W_y [cm ³]	Section [cm ²]	Weight [kg/m]
10-1530	15.15	61.85	7.95	16.23	10.38	2.81
11-1530	21.10	78.79	11.08	20.68	14.00	3.72
12-1530	13.10	49.63	6.88	13.03	8.43	2.28

Ordering Information

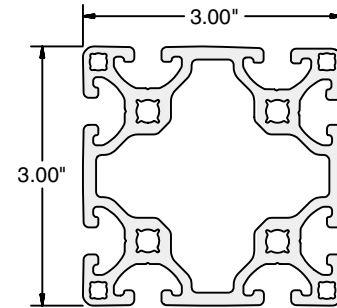
Description	Unit	Part #
3" x 1.5" Light Profile	Cut off max 240 in	12-1530
3" x 1.5" Standard Profile	Cut off max. 240 in	10-1530
3" x 1.5" Heavy Profile	Cut off max. 240 in	11-1530
* Saw Cut Needed for Cut to length		19-001

Quick Reference for Mating Components

Fasteners		T-Nuts	
1.5" Standard Fastener	25-003	1/4-20 Roll-In	25-001
1.5" Universal Fastener	25-004	5/16-18 Roll-In	25-002
End Caps		5/16-18 Double Roll-In	25-041
3" x 1.5"	18-1530	1/4-20 Economy	20-083
		5/16-18 Economy	20-082



3" x 3" Profiles



10-3030

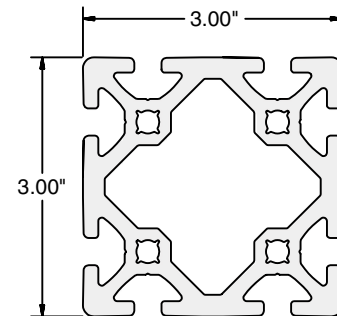
Application

These profiles are designed for medium to heavy duty structures and are ideal for structural support and post applications. These profiles have high structural integrity to create extra stable and rigid structures. T-slots on four sides allow for effortless mounting of accessories directly onto the structure without additional machining.

Technical Data

Aluminum, Clear Anodized (See Technical Data page 9 for full material and finish specification)

Part #	I_x [cm ⁴]	I_y [cm ⁴]	W_x [cm ³]	W_y [cm ³]	Section [cm ²]	Weight [kg/m]
10-3030	113.38	113.38	29.76	29.76	17.42	4.72
11-3030	146.43	146.43	38.43	38.43	22.61	6.04



11-3030

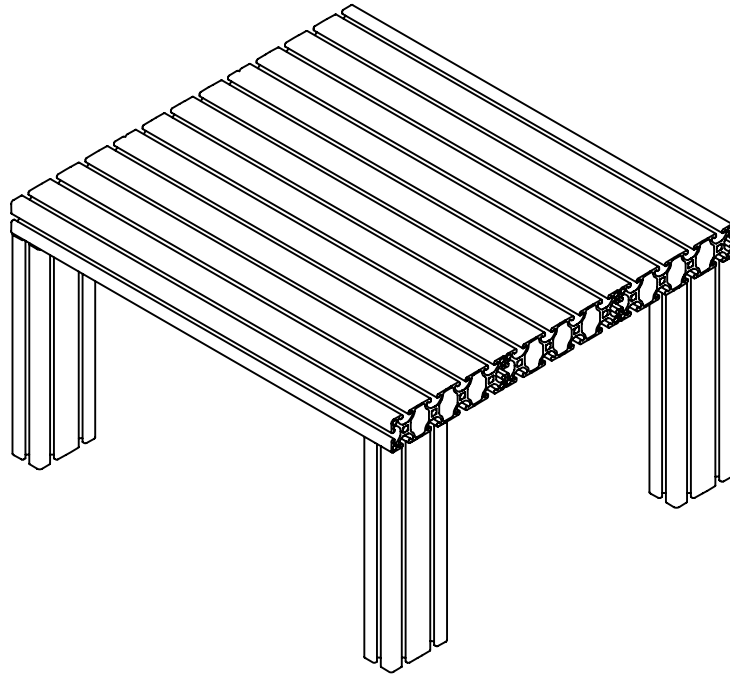
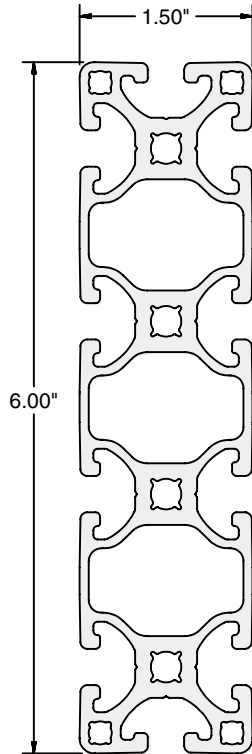
Ordering Information

Description	Unit	Part #
3" x 3" Standard Profile	Cut off max. 240 in	10-3030
3" x 3" Heavy Profile	Cut off max. 240 in	11-3030
* Saw Cut Needed for Cut to length		19-002

Quick Reference for Mating Components

Fasteners		Structural Accessories	
1.5" Standard Fastener	25-003	Levelers	pg 156
1.5" Universal Fastener	25-004	Casters	pg 167
End Caps		Plates	pg 102
3" x 3"	18-3030	Gussets	pg 104

6" x 1.5" Profiles



Application

10-1560 is designed for heavy duty structures and is an ideal profile for structural support and post applications. 10-1560 is designed with a high inertial strength in the 'y' axis. This allows for very high structural integrity to create extra stable and rigid structures. T-slots on four sides allow for effortless mounting of accessories directly onto the structure without additional machining. Because of its multiple T-slots, it is also an ideal profile for a fixture table.

10-1560

Technical Data

Aluminum, Clear Anodized (See Technical Data page 9 for full material and finish specification.)

Part #	I_x [cm ⁴]	I_y [cm ⁴]	W_x [cm ³]	W_y [cm ³]	Section [cm ²]	Weight [kg/m]
10-1560	27.97	420.89	14.68	55.24	18.33	6.98

Ordering Information

Description	Unit	Part #
6" x 1.5" Profile	Cut off max. 240 in	10-1560
* Saw Cut Needed for Cut to length		19-003

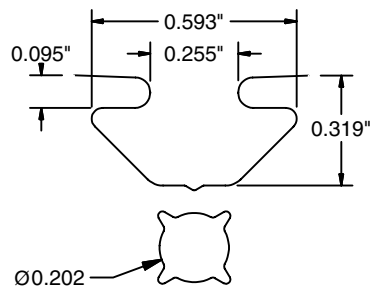
Quick Reference for Mating Components

Fasteners		T-Nuts	
1.5" Standard Fastener	25-003	1/4-20 Roll-In	25-001
1.5" Universal Fastener	25-004	5/16-18 Roll-in	25-002
End Caps		5/16-18 Double Roll-In	25-041
3" x 1.5"	18-1530	1/4-20 Economy	20-083
(Use 2 per end)		5/16-18 Economy	20-082

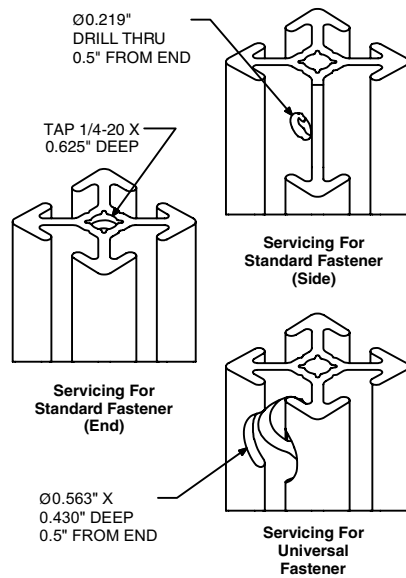
1" Series

Part #	Description	Moment of Inertia		Section Modulus		Section [cm ²]	Weight [kg/m]	Page
		I _x [cm ⁴]	I _y [cm ⁴]	W _x [cm ³]	W _y [cm ³]			
12-1010	Profile 1" x 1"	1.91	1.91	1.51	1.51	2.84	0.77	52
12-1020	Profile 2" x 1"	3.62	13.03	2.85	5.13	5.16	1.41	52
12-2020	Profile 2" x 2"	23.68	23.68	9.32	9.32	8.13	2.21	52

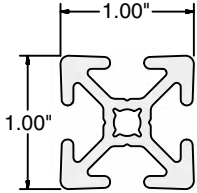
T-Slot Detail



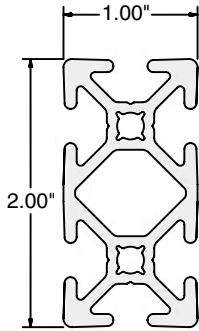
Service



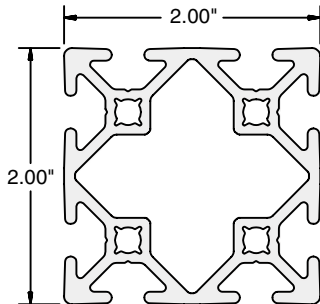
1" x 1", 2" x 1" and 2" x 2" Profiles



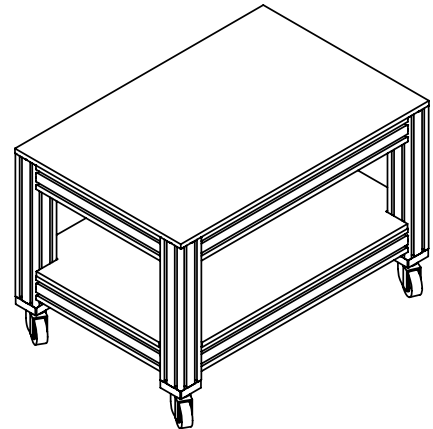
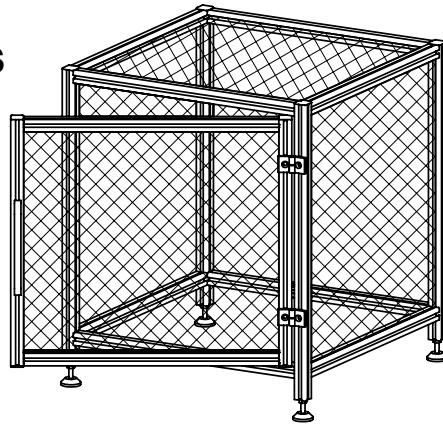
12-1010



12-1020



12-2020



Application

1" Series profiles are designed for safety guards, enclosures, shelves, and other light to medium duty applications. T-Slots on four sides allows for effortless mounting of accessories directly onto the structure without additional machining.

The T-slot is smaller than the 1.5" Series, requiring different hardware. With profile 12-1020, higher rigidity can be attained by orienting the extrusion on its 'y' axis.

The 12-2020 profiles are ideal for support and post applications. With their higher rigidity, structures can be built with higher stability.

Technical Data

Aluminum, Clear Anodized (See Technical Data page 9 for full material and finish Specification)

Part #	I_x [cm ⁴]	I_y [cm ⁴]	W_x [cm ³]	W_y [cm ³]	Section [cm ²]	Weight [kg/m]
12-1010	1.91	1.91	1.51	1.51	2.84	0.77
12-1020	3.62	13.03	2.85	5.13	3.16	1.41
12-2020	23.68	23.68	9.32	9.32	8.13	2.21

Ordering Information

Description	Unit	Part #
1" x 1" Profile	Cut off max. 240 in	12-1010
2" x 1" Profile	Cut off max. 240 in	12-1020
2" x 2" Profile	Cut off max. 240 in	12-2020
* Saw Cut Needed for Cut to length		19-001

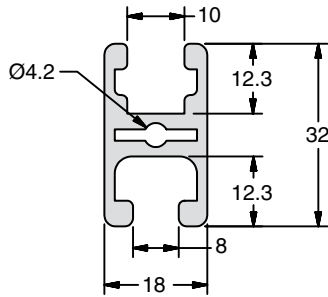
Quick Reference for Mating Components

Fasteners		Structural Accessories	
1" Standard Fastener	25-022	Levelers	pg 156
1" Universal Fastener	25-023	Casters	pg 167
End Caps		Plates	pg 102
1" x 1" (for 12-1010)	18-1010	Gussets	pg 104
2" x 1" (for 12-1020)	18-1020		
2" x 2" (for 12-2020)	18-2020		

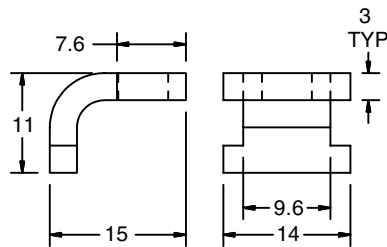
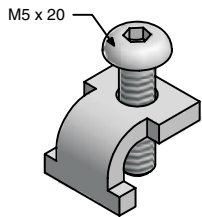
Specialty Profiles

Profile Type	Compatibility				Part #	Description	Page
Bi-Slot					12-032	Profile 18x32 Bi-Slot	54
Rolling Door Guides					12-022	Profile Rolling Door Guide	55
					12-421	Guide Profile UHMW	55
Sliding Door Guides			40	1.5"	12-012	Profile Sliding Door Guide 40 Upper	56
			40	1.5"	12-013	Profile Sliding Door Guide 40 Lower	56
	28	30			12-014	Profile Sliding Door Guide 30/28 Upper	56
	28	30			12-015	Profile Sliding Door Guide 30/28 Lower	56
Stiffener/Handle Profile					12-011	Profile Stiffener / Handle	57
Mesh Clamp	28	30	40	1.5"	12-010	Profile Mesh Clamp	58
Panel Holder	28	30	40	1.5"	12-016 B	Profile Panel Holder - Black	57
Clamp Bar			40	1.5"	12-105	Profile Clamp	58
Rack Angle	28	30	40	1.5"	12-109	Profile Rack Angle with Holes	59
	28	30	40	1.5"	12-110	Profile Rack Angle no Holes	59
				1.5"	20-075	Rack Angle Clip Nut M5	59
				1.5"	20-076	Rack Angle Clip Nut M6	59
				1.5"	25-075	Rack Angle Clip Nut #10-32	59
				1.5"	25-076	Rack Angle Clip Nut 1/4-20	59
UHMW Slide Bar			40	1.5"	12-400	Slide Bar UHMW	60
			40	1.5"	12-420	Slide Bar UHMW 40x10	60
	28	30			12-430	Slide Bar UHMW 28/30x8	60
	28	30	40	1.5"	12-410	Slide Strip UHMW	60
Panel Gasket					12-106	Panel Gasket 8	61
					12-108	Panel Gasket 10	61
Mesh Gasket					12-107	Mesh Gasket 8	61
Cover/Gasket Strips			40	1.5"	12-101	Cover/Gasket Strip 40	62
	28				12-103B	Cover/Gasket Strip 28	62
					12-115	Cover/Gasket Strip 20	62
			40		12-117	Push-In Panel Seal	62
Cover Strips			40	1.5"	12-102	Aluminum Cover Strip	62
			40	1.5"	12-111	PVC Cover Strip	62
	28	30			12-116	PVC Cover Strip	62
Safety Cover			40	1.5"	12-113	Safety Cover	62

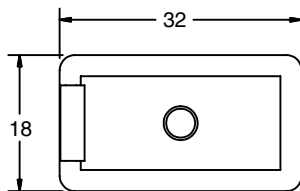
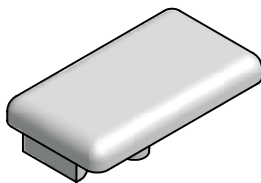
32x18 Bi-Slot Profile



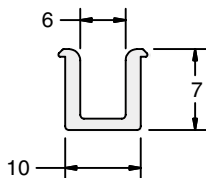
12-032



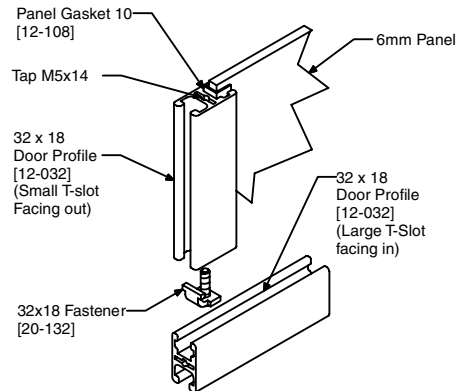
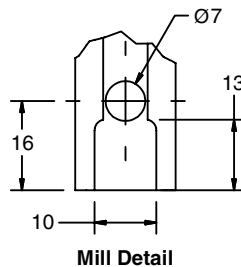
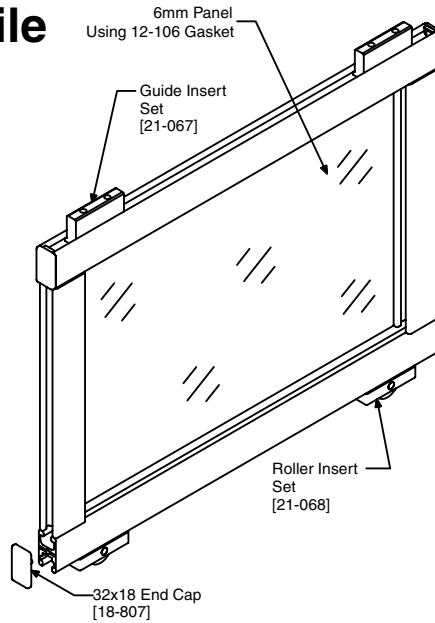
20-132



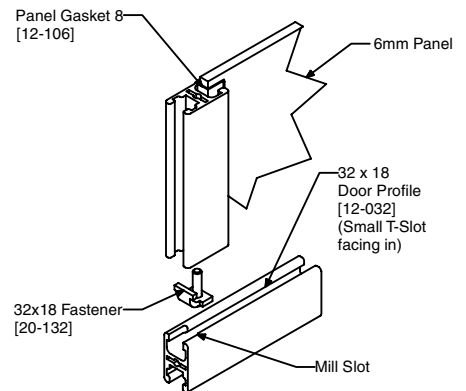
18-807



12-108



Frame for holding panels with small T-slot facing out. (No milling required)



Frame for holding panels with large T-slot facing out. (You must mill slot for fastener)

Application

Suitable for guarding, sliding doors, and enclosures. Panels up to 9mm thick may be clamped using spring clamp (22-032).

T-Slots will accept 6mm panels with Panel Gasket 8 or 10 (12-106 and 12-108).

Ordering Information

Description	Unit	Part #
Profile 18x32 Bi-Slot	Cut off max. 6m	12-032

*Saw Cut Needed for Cut to Length

19-001

Technical Data

Aluminum, Clear Anodized
Weight 0.67 kg/m

Fastening Set: Steel, galvanized
Weight: 9.0 g

Clamp Spring: Steel
Weight: 4g

Quick Reference for Mating Components

Fasteners

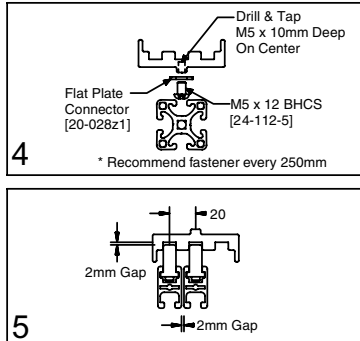
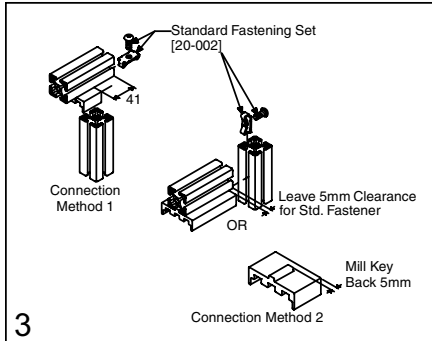
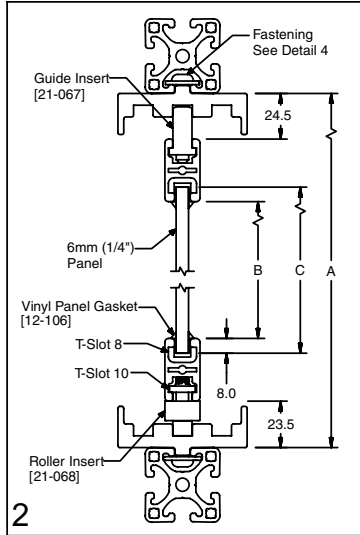
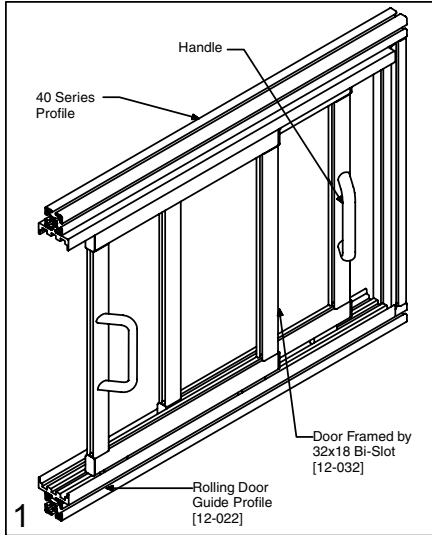
32x18 Bi-Slot Fastener	20-132
Clamp Spring	22-032

End Caps

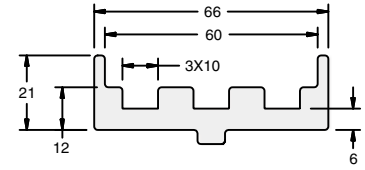
32x18	18-807
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Structural Accessories

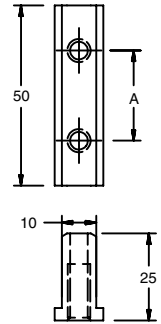
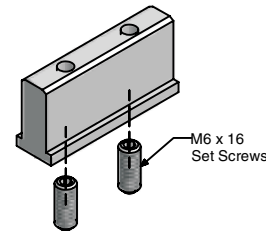
Panel Gasket 8	12-106
Panel Gasket 10	12-108
Roller Insert Set	21-068
Guide Insert Set	21-067



Rolling Door Guide Profile



12-022



21-067
21-073

Application

Designed for large doors with removable door panels for maintenance. Applications include case packers, material handling equipment, packaging installations and access panels for large machine enclosures.

Ordering Information

Description

Profile Rolling Door Guide
Guide Profile UHMW

*Saw Cut Needed for Cut to Length

Technical Data

Profile

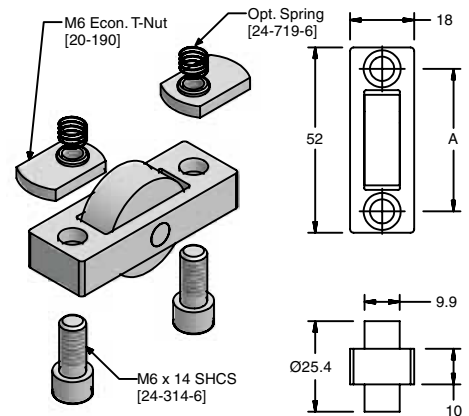
Aluminum, Clear Anodized
Weight: 1.78 kg/m

Guide Insert

UHMW (white)

Roller Insert

Roller: Delrin (black), Pin: Steel
Housing: Aluminum, Clear Anodized



21-068
21-075

Roller Insert Set

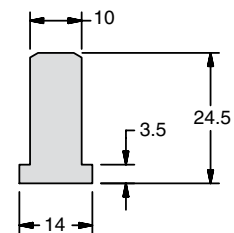
40 Series (A=40mm) **21-068**
1.5" Series (A=1.5") **21-075**

Roller Set includes
(1) Housing, (1) roller,
(2) SCHS screws
and (2) Offset T-Slot nuts
with compression spring

Guide Insert Set

40 Series (A=25mm) **21-067**
1.5" Series (A=1") **21-073**

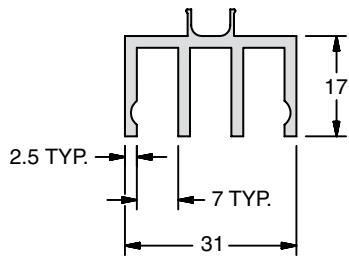
Guide Set including
(1) 50mm guide insert,
(2) setscrews



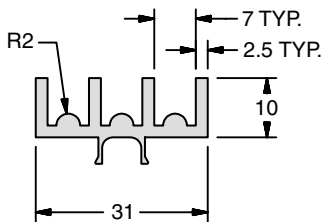
12-421



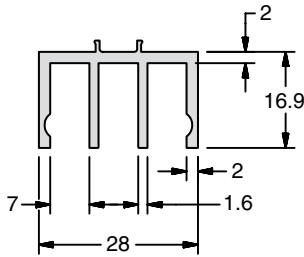
Sliding Door Guide Profile



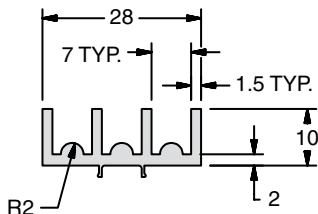
12-012



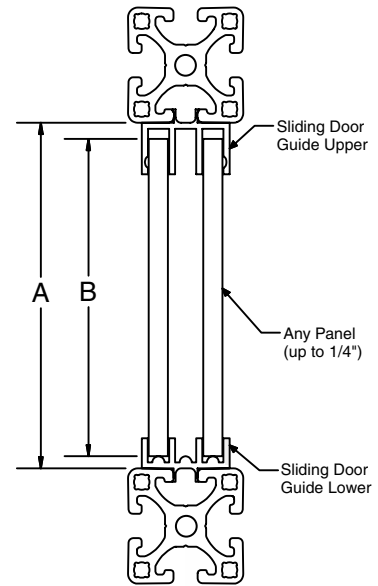
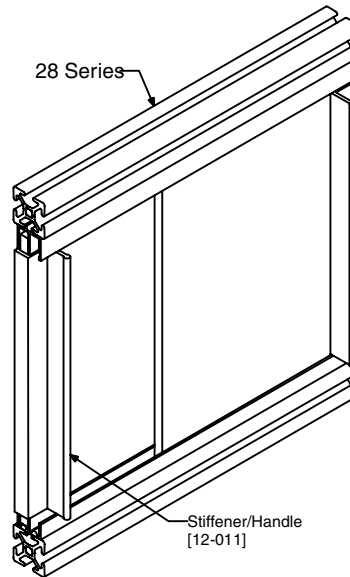
12-013



12-014



12-015



B = A - 15mm for removable doors
B = A - 10mm for non-removable doors
*Designed for panels up to 1/4" (6.4mm)

Application

These profiles create light duty sliding panels for windows and access ports for safety guards, enclosures or partitions. Installation onto 40, 30, 28 or 1.5" Series profiles do not require fasteners and will snap into the T-Slot. The lower guides are designed to reduce friction. The upper guides facilitate lift-out removal of the panel without disassembly. Tamper proof mounting may also be provided.

Ordering Information

Description	Unit	Part #
40/1.5" Series		
Profile Sliding Door Guide 40/1.5" Upper	3m each	12-012
Profile Sliding Door Guide 40/1.5" Lower	3m each	12-013
28/30 Series		
Profile Sliding Door Guide 30/28 Upper	3m each	12-014
Profile Sliding Door Guide 30/28 Lower	3m each	12-015
*Saw Cut Needed for Cut to Length		19-001

Quick Reference for Mating Components

Structural Accessories

Panels

Page 112

Application

Designed as a combination handle and stiffener for sliding panel doors (1/4" thick material). Panels snap into the profile slot and may be secured by an adhesive or a fastener.

Technical Data

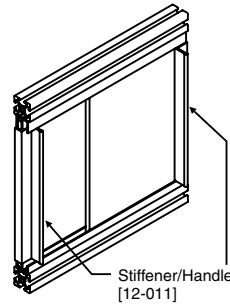
Aluminum, Clear Anodized
 Weight: 0.93kg/m

Ordering Information

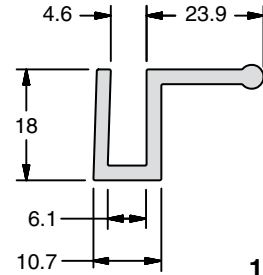
Description

Panel Handle Stiffener
 *Saw Cut Needed for Cut to Length

Unit	Part #
3m each	12-011
	19-001



**Stiffener/Handle
 Profile**



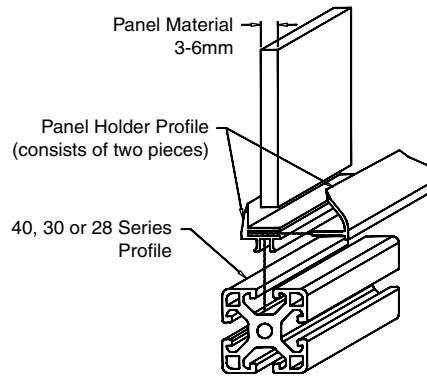
12-011

Application

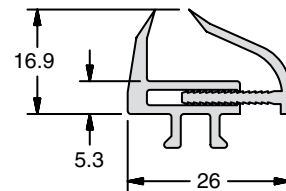
Profile designed for panels 3-6mm thick. Built-in seal for splash guard applications. Can be used for 40, 30, 28 and 1.5" Series profiles.

Technical Data

Base: Rigid PVC Lip
 Seal: Vinyl
 Weight: 0.16kg/m



Panel Holder



12-016

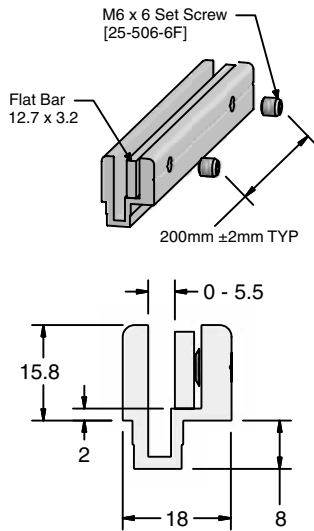
Ordering Information

Description

Panel Holder Profile
 *Saw Cut Needed for Cut to Length

Unit	Part # (Black)
Cut off max. 2m	12-016B
	19-001

Mesh Clamp Profile



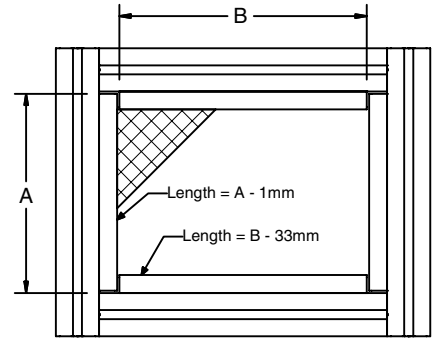
Application

Captures wire mesh panels up to 5.5mm thick. Excellent for constructing safety guards. Installs onto 40, 30, 28 and 1.5" series profiles without additional fasteners.

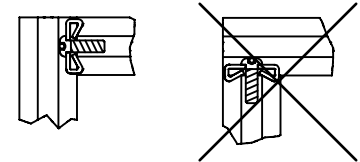
Technical Data

Aluminum, Clear Anodized
Weight: 0.53 kg/m

Tapped for M6 every 200mm (±2mm)
Includes clamp strip and M6X6 flat point screws



* Wire Mesh Size: A - 6mm and B - 6mm



Standard fastener position is critical to avoid interference with the mesh clamp.

12-010

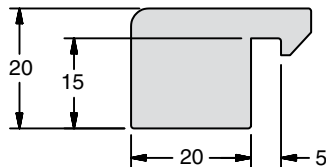
Ordering Information

Description

Mesh Clamp Profile
*Saw Cut Needed for Cut to Length

Unit	Part #
3m each	12-010
	19-001

Clamp Bar



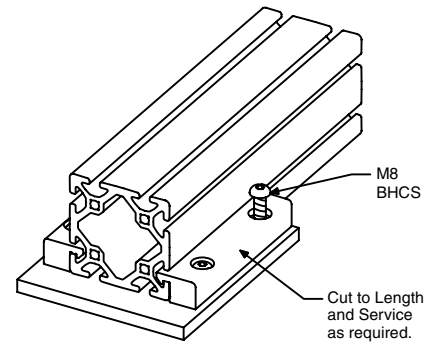
12-105

Application

Attaches 40 Series profiles to base plates or other parts. Must be used in pairs. Not recommended for linear applications.

Technical Data

Aluminum, Clear Anodized
Weight: 1.24 kg/m



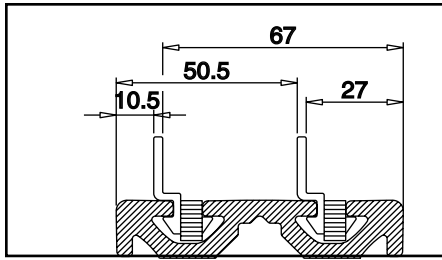
Ordering Information

Description

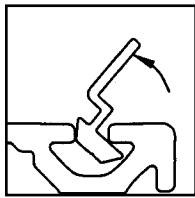
Clamp Bar Profile
*Saw Cut Needed for Cut to Length

Unit	Part #
2m each	12-105
	19-001

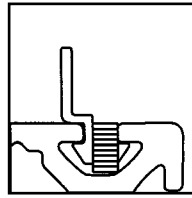
Rack Angle Profile



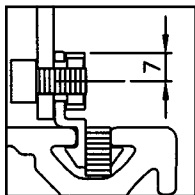
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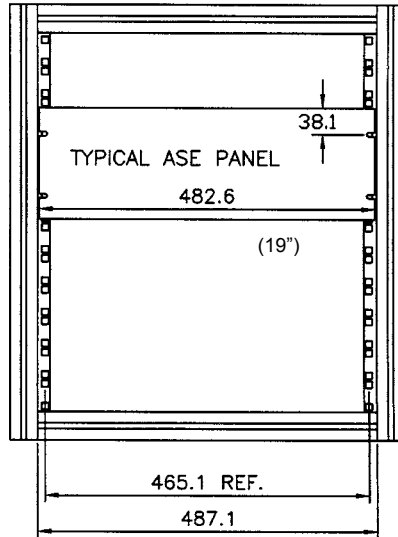
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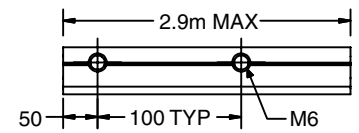
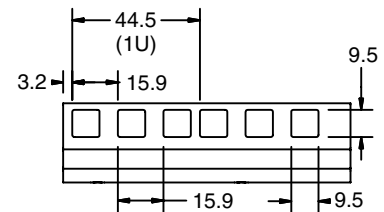
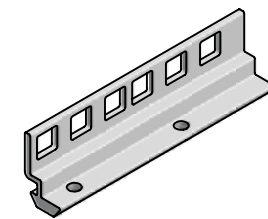
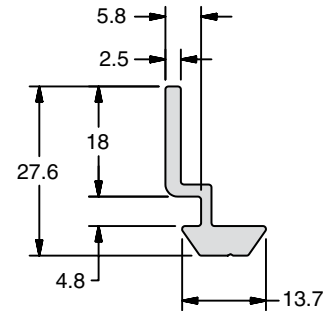
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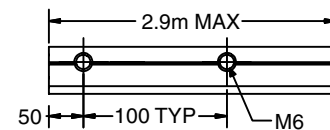
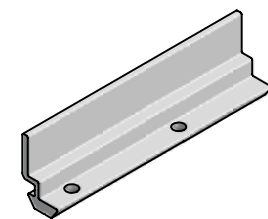
4



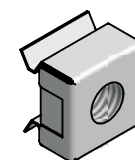
- 1 Mounting dimensions
- 2 Inserting rack angle into 40 series T-slot
- 3 Rack Angle is secured in T-slot with set screw M6x12. Requires 2 cuts to ensure matching pair
- 4 Panel is attached to Rack Angle with M5 or M6 screw and clip nut



12-109



12-110



20-075
20-076
25-075
25-076

Application

Used for attaching standard 19" rack components to 40, 30, 28 and 1.5" Series Profiles (30 and 28 series require installation from end of profile).

12-109 is machined with square holes for installation of a Clip Nut. Clip Nut snaps into square holes for attaching panels and accessories.

12-110 is blank and can be used to support horizontal panels such as ceiling tiles.

Ordering Information

Description

Profile Rack Angle with Holes

Profile Rack Angle no Holes

*Saw Cut Needed for Cut to Length

Rack Angle Clip Nut M5

Rack Angle Clip Nut M6

Rack Angle Clip Nut #10-32

Rack Angle Clip Nut 1/4-20

Unit

3m each

3m each

1 pc

1 pc

1 pc

1 pc

Part

12-109

12-110

19-001

20-075

20-076

25-075

25-076

Technical Data

Extrusion

Aluminum, Clear Anodized
Weight: 12-109 0.62kg/m
12-110 0.63kg/m

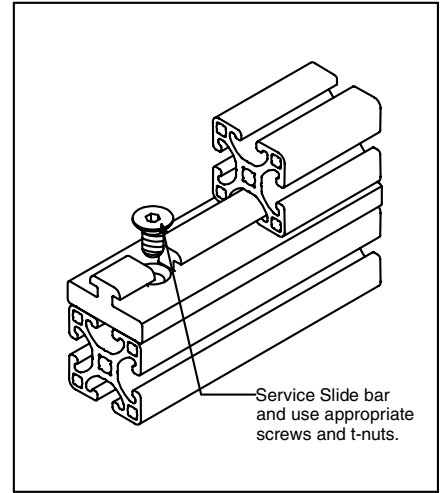
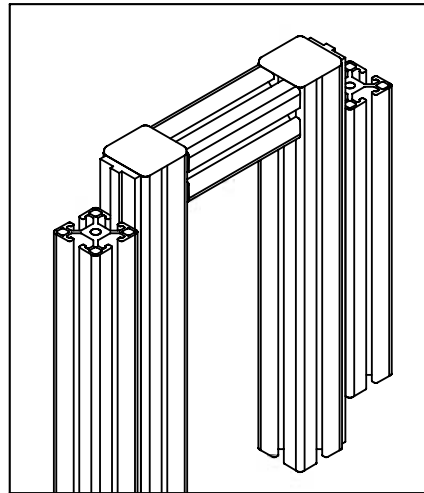
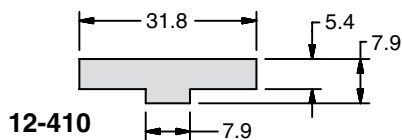
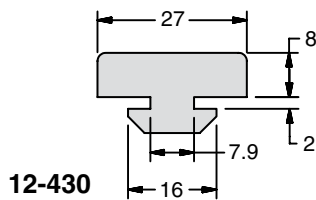
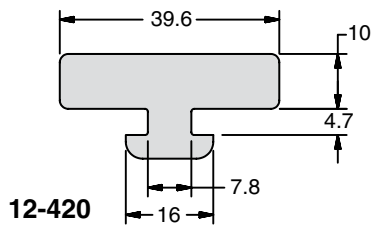
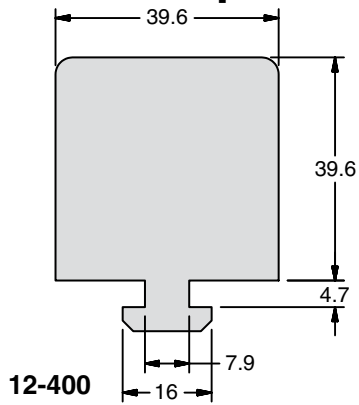
Includes M6X12 flat point set screws

Clip Nut (Order separately)

Steel, Zinc Plated

Weight 5g

UHMW Slide Bar & Slide Strip



Application

Durable, low-friction material that is self lubricating and easily machined. These profiles provide a smooth gliding surface for a wide range of applications including linear systems to adjustable work surfaces or sliding panels.

Technical Data

Extrusion

UHMW, White

40/1.5" Series Applications use:
12-400, 12-420, and 12-410

28/30 Series Applications use:
12-430 or 12-410

Ordering Information

Description

Slide Bar UHMW
Slide Bar UHMW 40x10
Slide Bar UHMW 28/30x8
Slide Strip UHMW
*Saw Cut Needed for Cut to Length

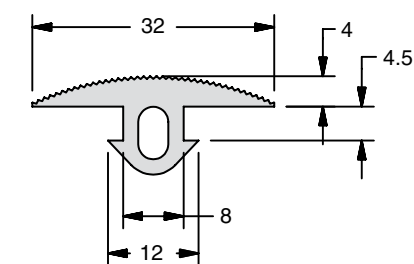
Unit

Cut off max. 3m
Cut off max. 3m
Cut off max. 3m
Cut off max. 3m

Part

12-400
12-420
12-430
12-410
19-001

Anti-Skid Cover

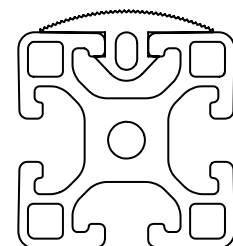


Application

Cover for 40 and 1.5" Series profiles is used for non-slip surfaces such as ladders and stops for sliding doors. Oil and water resistant.

Technical Data

Rubber, Black
Hardness 80 Shore



Ordering Information

Description

Anti-Skid Cover

Unit

Cut off max. 20m

Weight

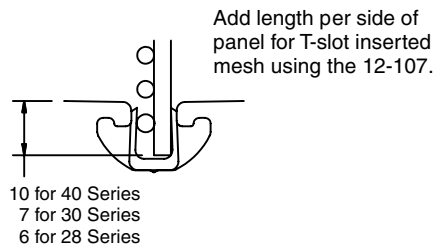
180 g/m

Part

12-114

Application

Mesh gasket for mounting 12 gage wire mesh in 40, 30, 28 and 1.5" Series T-Slots.



Technical Data

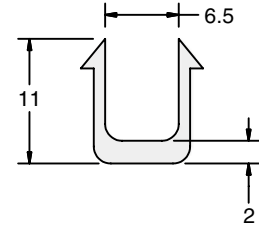
Molded vinyl (Clear)

Weight: 90g/m

Ordering Information

Description	Unit	Part #
Mesh Gasket 8	Cut off max. 30.5m	12-107
Full Roll	30.5m (ea)	12-107R

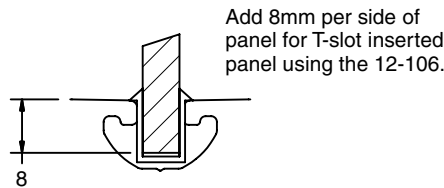
Mesh Gasket 8



12-107

Application

Panel gasket for installing 6mm panels in 40, 30, 28 and 1.5" Series profile T-slot.



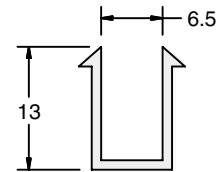
Technical Data

Molded vinyl (Grey)
 Weight: 40g/m

Ordering Information

Description	Unit	Part #
Panel Gasket 8	Cut off max. 30.5m	12-106
Full Roll	30.5m (ea)	12-106R

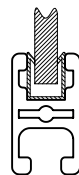
Panel Gasket 8



12-106

Application

Panel gasket for installing 6/8mm panels in T-slots of 32x18 Door Profile.



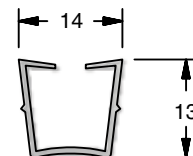
Technical Data

PP & TPE, Black
 Weight: 90g/m

Ordering Information

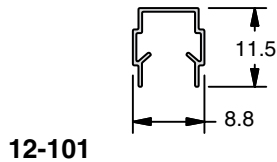
Description	Unit	Part #
Panel Gasket 10	2m each	12-108

Panel Gasket 10

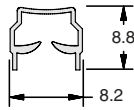


12-108

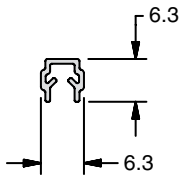
Cover/Gasket Strips



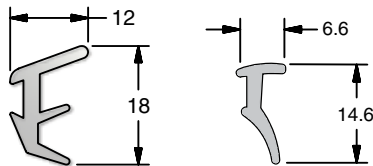
12-101



12-103B

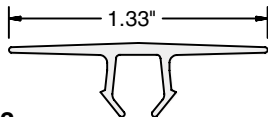


12-115

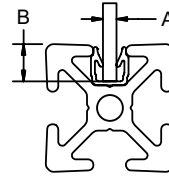
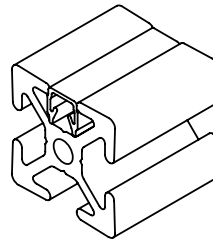


12-117-3

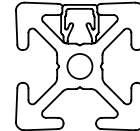
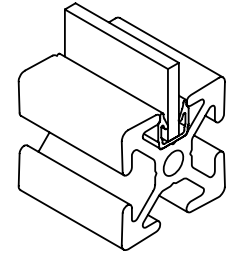
12-117-6



12-113



Series	A (mm)	B (mm)
40/30/1.5"	6	10
28	4-6	7
20	2	6



- T-slot covering can be cut easily with tin snips.
- Wires and cables can be concealed in T-slot with use of T-slot cover.

Application

Primarily used to cover the T-Slot to prevent dust and debris from building up, or to conceal wiring routed in the T-Slot. These covers can also be inverted and used as a panel gasket. These items are easily cut with tin snips.

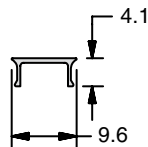
Technical Data

12-101, 12-103, 12-115: Polypropylene,
 See ordering for colors
 12-113: Rigid PVC, Yellow
 12-117-3/6: TPE, Black
 Weight: 12-101 52 g/m
 12-103 44 g/m
 12-113 100 g/m
 12-115 27 g/m
 12-117-3 70 g/m
 12-117-6 31 g/m

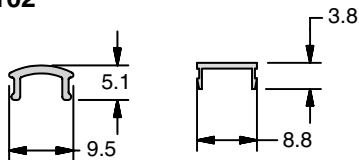
Ordering Information

Description	Unit	Part # (Clear)	Part # (Black)	Part # (Yellow)	Part # (Gray)
Cover/Gasket Strip 40/1.5" Series	Each at 2m	12-101	12-101B	12-101Y	12-101G
Cover/Gasket Strip 28 Series	Each at 2m		12-103B		
Cover/Gasket Strip 20 Series	Each at 2m	12-115	12-115B		
Safety Cover Strip 40/1.5" Series	Each at 2m			12-113	
Push-in Panel Seal (3mm)	Each at 100m		12-117-3		
Push-in Panel Seal (6mm)	Each at 100m		12-117-6		

Cover Strips



12-102



12-111

12-116

Application

Used to cover the T-Slot to prevent dust and debris from building up, or to conceal wiring routed in the T-Slot.

Technical Data

Aluminum, Anodized
 Colors: Clear
 PVC
 Colors: Clear, Black, Yellow, or Blue

Ordering Information

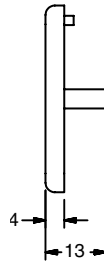
Description	Unit	Part # (Clear)	Part # (Black)	Part # (Yellow)	Part # (Blue)
Aluminum Cover Strip 40/1.5" Series	Each at 2m	12-102			
PVC Cover Strip 40/1.5" Series	Each at 2m	12-111	12-111B	12-111Y	12-111BL
PVC Cover Strip 30/28 Series	Each at 2m	12-116	12-116B		

Application

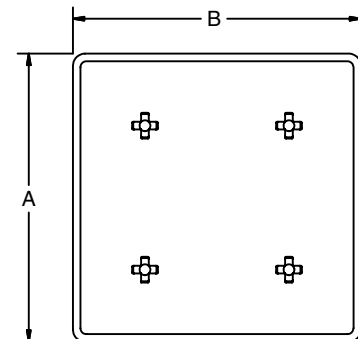
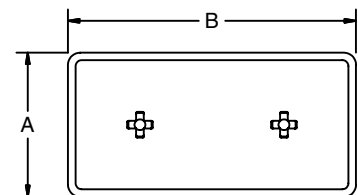
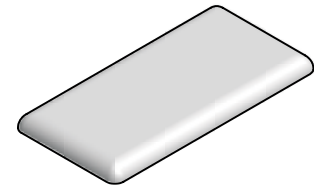
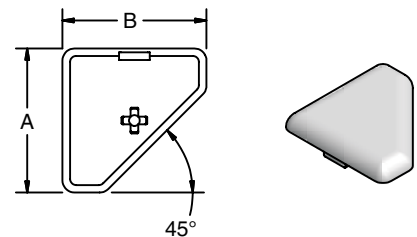
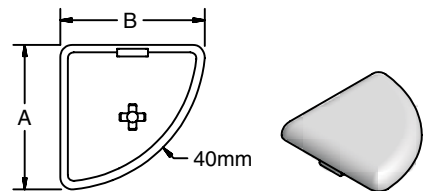
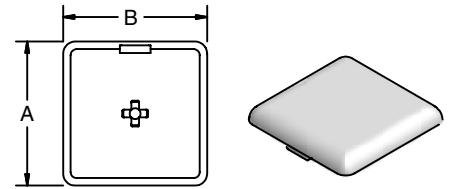
Caps are used to cover the exposed ends of profiles after assembly. The caps provide both protection from potentially sharp edges, and also an aesthetically pleasing appearance.

Technical Data

Glass-Filled Nylon (Black)



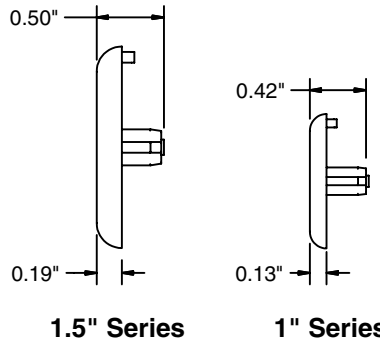
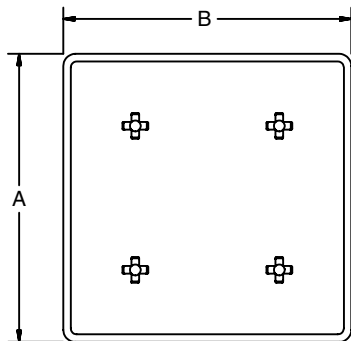
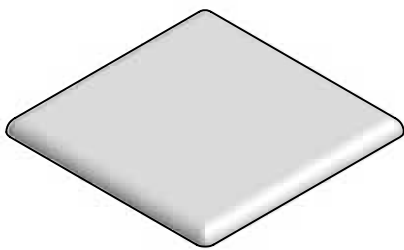
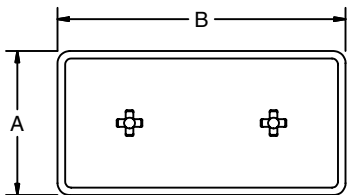
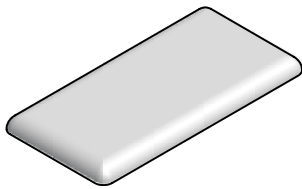
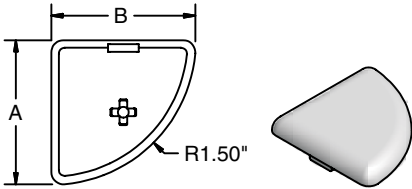
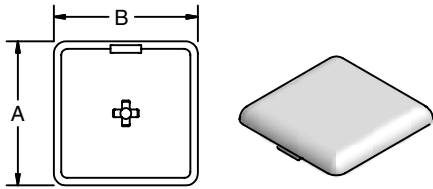
**Metric End Caps
 Access Hole Plugs**



Ordering Information

Series	Description (B x A)	Unit	Wt (g)	Part #
40 Series	40x16	Each	4	18-811
	40x40	Each	7	18-813
	40x40 Heavy Square	Each	10	18-805
	40x40 Quarter Round	Each	5	18-843
	80x16	Each	6	18-812
	80x40	Each	15	18-814
	80x80	Each	28	18-815
	120x40	Each	22	18-840
	120x80	Each	43	18-841
	160x16	Each	10	18-806
	160x28	Each	20	18-816
	160x40	Each	28	18-817
	160x80	Each	66	18-818
	40x40-45°	Each	6	18-820
	40-45°	Each	4	18-845
	R40/80-30	Each	17	18-883
R40/80-45	Each	19	18-885	
R40/80-60	Each	22	18-886	
30 Series	30 x 30 Quarter Round	Each	4	18-838
	30x30	Each	5	18-803
	60x30	Each	11	18-863
28 Series	28x28	Each	4	18-808
	28x56	Each	8	18-809
	28x28-45°	Each	3	18-844
20 Series	20x10	Each	0.5	18-830
	20x20	Each	1	18-802
	20x40	Each	2	18-831
	40x40, 20 Series	Each	4	18-832
Specialty Profiles	56x56 (Post Profile)	Each	16	18-819
	32x18 Door Profile	Each	3	18-807
Access Hole Plugs	7mm Plastic	Each	0.1	18-710
	7mm Nickel	Each	0.5	18-713

Inch End Caps Access Hole Plug



1.5" Series

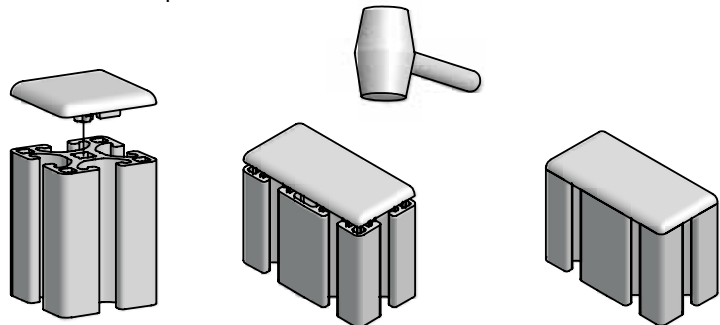
1" Series

Ordering Information

Series	Size (B x A)	Unit	Weight	Part #
1.5" Series	1.5" x 1.5"	Each	0.25 oz	18-1515
	1.5" x 1.5" Quarter Round	Each	0.21 oz	18-1543
	3" x 1.5"	Each	0.5 oz	18-1530
	3" x 3"	Each	1 oz	18-3030
1" Series	1" x 1"	Each	0.12 oz	18-1010
	2" x 1"	Each	0.25 oz	18-1020
	2" x 2"	Each	0.49 oz	18-2020
Access Hole Plugs	9/32" Plastic	Each	0.04 oz	18-710
	9/32" Nickel Plated Steel	Each	0.18 oz	18-713

Assembly Hint

Press end cap into end hole(s), then lightly tap with rubber or plastic mallet.

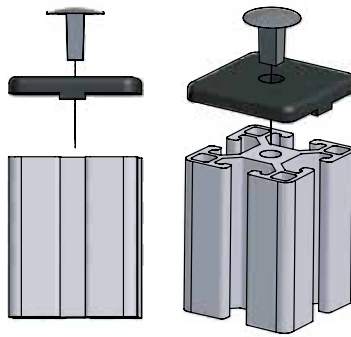


Application

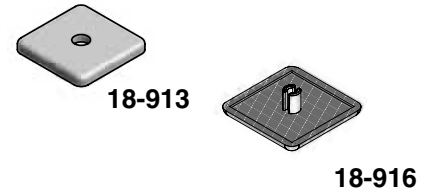
Secured End Caps are attached to profile end with push-in fastener (sold separately). No profile servicing is required.

Technical Data

Glass-Filled Nylon (Black)
 Screw: St, black oxide



Secure End Caps



Ordering Information

Description	Unit	Weight	Part #	w/Studs	Screws
28x28 - Secure	Each	7g	18-911*		
28x56 - Secure	Each	7g	18-912*		
30x30 - Secure	Each	7g		18-919**	(1) 24-212-4
60x30 - Secure	Each	7g		18-920**	(2) 24-212-4
40x40 - Secure	Each	7g	18-913*	18-916**	(1) 24-212-4
80x40 - Secure	Each	23g	18-914*	18-917**	(2) 24-212-4
80x80 - Secure	Each	26g	18-918*	18-915**	(4) 24-212-4
Push-in Fastener	Each	2	18-715		

* Requires push-in-fastener

** Requires screws

Conduit Elements

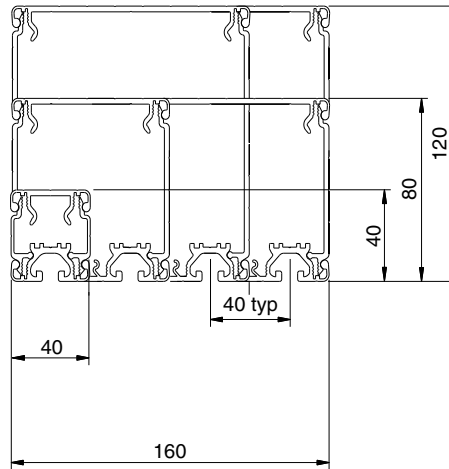
Conduit profiles provide a convenient way to integrate cable, hose and control components to an IPS structural assembly or linear system.

These anodized aluminum profiles are modular and provide great flexibility and are easy to assemble. The dimensions are based on 40mm increments and are compatible with all standard IPS elements.

Assembled conduit sections may be attached to any IPS profile using standard T-slot fastening methods. Reference grooves allow for accurate positioning of any necessary holes or machining.

IPS conduit profiles offer snap-together assembly that can be secured with optional locking screws.

Modular Dimensions

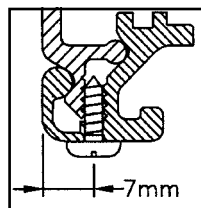
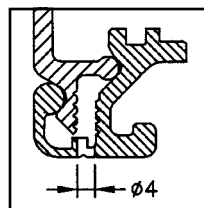
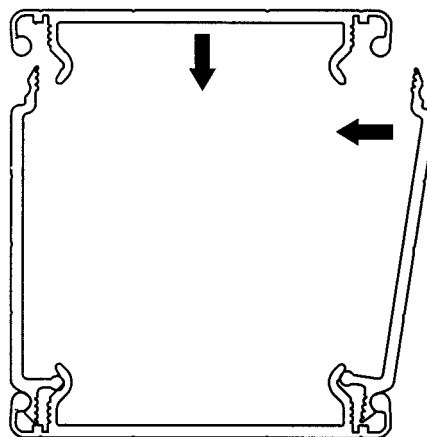


The conduit is made up of high tensile strength aluminum elements:

- Wall duct profile 40, 80 and 120
- Conduit support profile 40, 80, 120 and 160 (with or without T-slot)

Wall duct profiles of any required length are snapped into a support profile. Another support profile closes the duct with a "snap in" fit. The conduit may be secured with screws where necessary.

Assembly of Conduit Elements



1 Scored groove for locating locking screw (24-695) in Support Profile.

2 Locking screw turned into the pre-extruded threads of the support wall profiles.

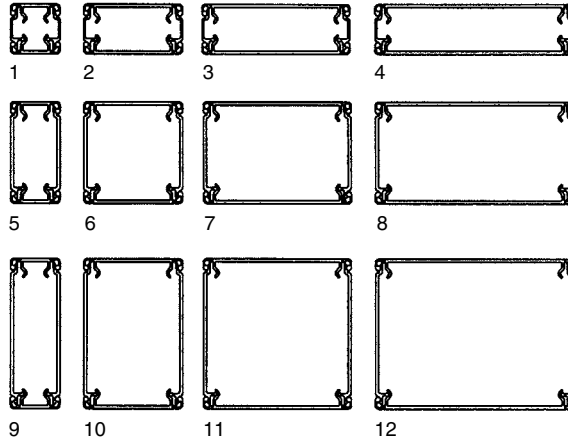
Conduit Cross Section Guide

Type	Item #	Dimensions H x W [mm]	Qty	Wall Part#	Qty	Support Part #1	Qty	Support Part #2	Area [cm ²]	Area [inch ²]
Conduits Without T-Slots	1	40x40	2	15-042	2	15-040	—	—	16.00	2.48
	2	40x80	2	15-042	2	15-080	—	—	32.00	4.96
	3	40x120	2	15-042	2	15-120	—	—	48.00	7.44
	4	40x160	2	15-042	2	15-160	—	—	64.00	9.92
	5	80x40	2	15-082	2	15-040	—	—	32.00	4.96
	6	80x80	2	15-082	2	15-080	—	—	64.00	9.92
	7	80x120	2	15-082	2	15-120	—	—	96.00	14.88
	8	80x160	2	15-082	2	15-160	—	—	128.00	19.84
	9	120x40	2	15-122	2	15-040	—	—	48.00	7.44
	10	120x80	2	15-122	2	15-080	—	—	96.00	14.88
	11	120x120	2	15-122	2	15-120	—	—	144.00	22.32
	12	120x160	2	15-122	2	15-160	—	—	192.00	29.76
Conduits With T-Slots on one Side	13	40x40	2	15-042	1	15-040	1	15-041	9.20	1.43
	14	40x160	2	15-042	1	15-160	1	15-161	36.80	5.70
	15	80x40	2	15-082	1	15-040	1	15-041	25.20	3.91
	16	80x160	2	15-082	1	15-160	1	15-161	100.80	15.62
	17	120x40	2	15-122	1	15-040	1	15-041	41.20	6.39
	18	120x160	2	15-122	1	15-160	1	15-161	164.80	25.54
Conduits with T-Slots on Both Sides	19	80x160	2	15-082	2	15-161	—	—	73.60	11.41
	20	120x160	2	15-122	2	15-161	—	—	137.60	21.33
Conduits with Partitions	21	40x160	5	15-042	1	15-160	1	15-041	36.80	5.70
	22	80x160	5	15-082	1	15-160	1	15-161	100.80	15.62
	23	160x160	5	15-122	1	15-160	1	15-161	164.80	25.54

Cross Sections

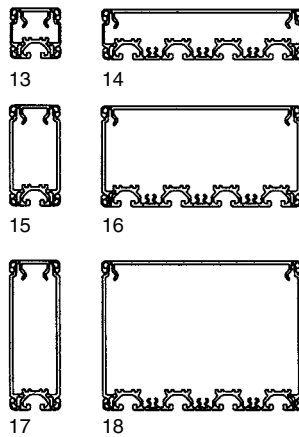
Conduits without T-slots

- 1 40x40
- 2 40x80
- 3 40x120
- 4 40x160
- 5 80x40
- 6 80x80
- 7 80x120
- 8 80x160
- 9 120x40
- 10 120x80
- 11 120x120
- 12 120x160



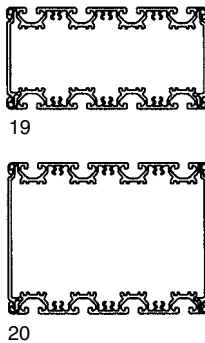
Conduits with T-slots on one side

- 13 40x40
- 14 40x160
- 15 80x40
- 16 80x160
- 17 120x40
- 18 120x160



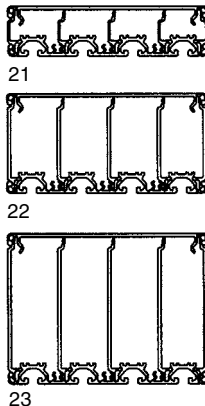
Conduits with T-slots on both sides

- 19 80x160
- 20 120x160

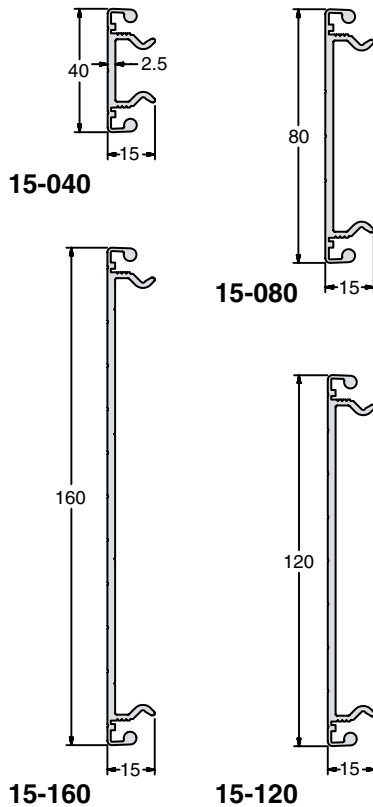


Conduits with Partitions

- 21 40x160
- 22 80x160
- 23 160x160



Conduit Support



Application

Bottom or cover components for conduit assemblies. Wall Duct profiles snap in for fast applications. Locking screw (24-695) can be added to secure the assembly and provide ground continuity between profiles members.

Technical Data

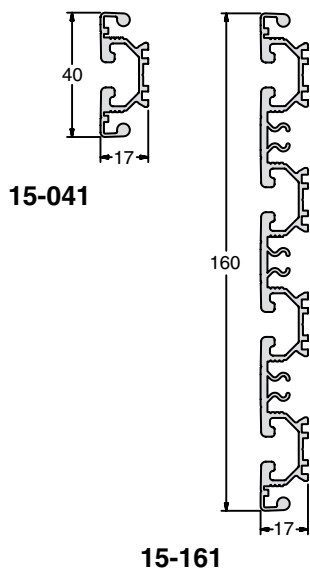
Aluminum, Clear Anodized	
Weight	kg/pc
15-040	1.96
15-080	3.04
15-120	3.92
15-160	5.00

Ordering Information

Description	Unit	Part #
Conduit Support 40	4m each	15-040
Conduit Support 80	4m each	15-080
*Saw Cut Needed for Cut to Length		19-001
Conduit Support 120	4m each	15-120
Conduit Support 160	4m each	15-160
*Saw Cut Needed for Cut to Length		19-002

Sold in full pieces only.

Conduit Support with T-Slot



Application

Bottom or cover components for conduit assemblies with 40 Series T-Slots on external face for mounting with standard hardware. Wall Duct Profiles can be used to create partitions.

Technical Data

Aluminum, Clear Anodized	
Weight	kg/pc
15-041	2.40
15-161	9.16

Ordering Information

Description	Unit	Part #
Conduit Support 40 W/ T-Slot	4m each	15-041
*Saw Cut Needed for Cut to Length		19-001
Conduit Support 160 W/T-Slot	4m each	15-161
*Saw Cut Needed for Cut to Length		19-002

Sold in full pieces only.

Wall Duct Profiles

Application

This profile creates the sides of the conduit assembly and can be used to create partitioned spaces within assemblies using T-Slotted top and bottom supports.

Technical Data

Aluminum, Clear Anodized

Weight	kg/pc
15-042	0.84
15-082	2.20
15-122	3.24

Ordering Information

Description

Conduit Wall Duct 40

Conduit Wall Duct 80

Conduit Wall Duct 120

*Saw Cut Needed for Cut to Length

Sold in full pieces only.

Unit

4m each

4m each

4m each

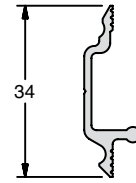
Part

15-042

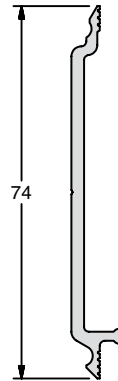
15-082

15-122

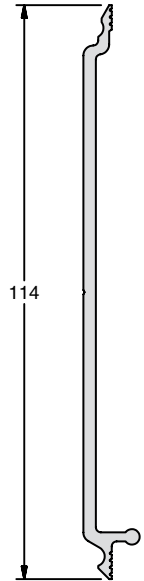
19-001



15-042

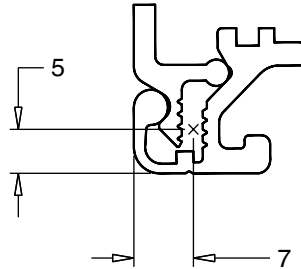
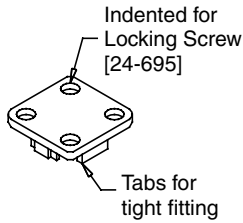


15-082

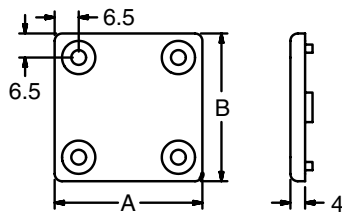


15-122

Conduit End Caps



Recommended location of 5mm hole for locking screw on custom conduit caps (note orientation).



Application

End Caps

Face covering for sealing the end openings of conduit assemblies. Not for use on 40 Series profiles.

Locking Screw

Securely fastens support and wall profiles and breaks the anodized coating creating a positive ground between profile members.

Technical Data

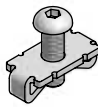
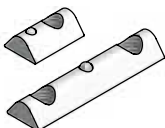
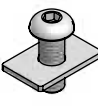
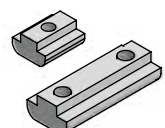
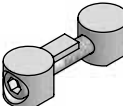
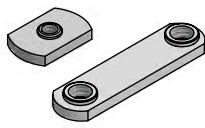


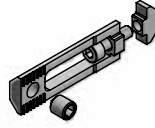


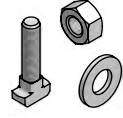

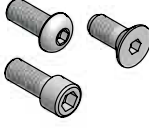

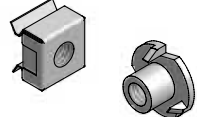

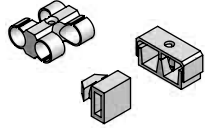
End Caps
 Glass-filled nylon, Black

Locking Screw
 Steel, Galvanized
 4.2 x 9.5mm, DIN 7971

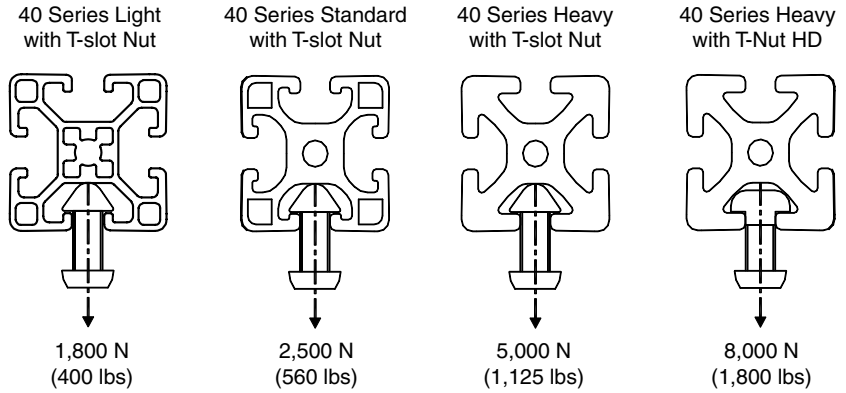
Ordering Information

Description [AxB]	Unit	Part #	Weight
Conduit Cap 40x40	1 pc	15-803	8g
Conduit Cap 40x80	1 pc	15-804	14g
Conduit Cap 40x120	1 pc	15-810	30g
Conduit Cap 40x160	1 pc	15-806	30g
Conduit Cap 80x80	1 pc	15-805	30g
Conduit Cap 80x120	1 pc	15-811	50g
Conduit Cap 80x160	1 pc	15-807	58g
Conduit Cap 120x120	1 pc	15-812	70g
Conduit Cap 120x160	1 pc	15-813	90g
Locking Screw 4.2 x 9.5	1 pc	24-695	2g

Section 2 Fasteners

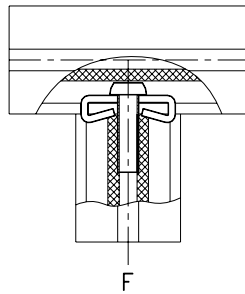
Standard Fasteners	76		T-Nuts	83	
			Double T-Nuts	84	
			Self-Aligning T-Nuts	84	
			T-Slot Bars	85	
Flat Plate Fasteners	77		Heavy Duty T-Nuts	85	
			Heavy Duty T-Slot Bars	85	
Butt-Fastening Sets	77		Economy T-Nuts	86	
			Drop-in Economy	87	
Universal Fasteners	78		T-Nut Zn	87	
Milling Connectors	79		Anodize Breaker	88	
Central Connector	79		T-Bolts	88	
			Nuts	89	
			Washers	89	
Self-Tapping	80		Metric Screws	90-91	
			Imperial Screws	92-93	
			Set Screws	94	
Profile-to-Wall	80		Clip Nuts	94	
			High Cycle Nut	94	
Miter Connectors	81		T-Clips	95	
			Cable Tie Holders	95	
			Cable/Hose Holders	96	

Safe Load




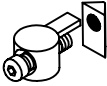


Pull Test

Two pieces of 40x40 Heavy profile were assembled to form a tee with a standard fastener and a button head screw. Force was applied until the tee started to separate. The profile failed before the fastener. The profiles were still held together at the end of the test. There were no catastrophic failures. Extra screw length beyond standard 18mm did not significantly change test results.



Screw	Engaged Length	Force (F)	
		N	Lbs
M8x18	10.8 mm	27,250	6,126
M8x20	12.8 mm	26,761	6,016
M8x25	17.8 mm	25,350	5,699
M8x30	22.8 mm	26,774	6,019

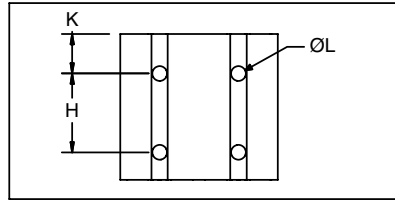
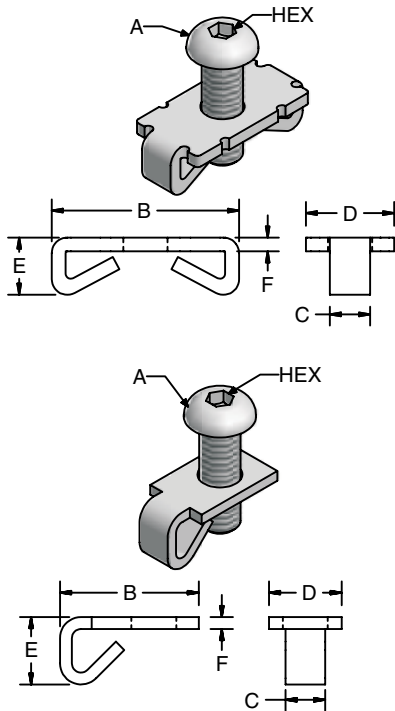
Fastener Quick Reference

Fastener Type	Hardware	40 Series	30 Series	28 Series	20 Series	1.5" Series	1" Series
Standard Fastener 	M5				20-021		
	M8	20-002	20-003	20-003		20-002	
	M8 SS	20-002SS	20-003SS	20-003SS		20-002SS	
	1/4-20						25-022
	5/16-18	25-003				25-003	
	5/16-18 SS	25-003SS				25-003SS	
Standard Fastener Single Tab	M8	20-144				20-144	
	5/16-18	25-014				25-014	
Universal Fastener 	M6		20-008	20-005			
	M8	20-004 ⁽¹⁾				20-004	
	1/4-20						25-023
	5/16-18	25-004				25-004	
Flat Plate 	M8x16	20-028				20-028	
	M8x10		20-028Z1	20-028Z1			
	5/16-18	25-028				25-028	
Butt Fastener 	M8x45	20-006 ⁽²⁾	20-012	20-012		20-006	
	1/4-20						25-017
	5/16-18	25-016				25-016	
Milling Connector	M5	28-004	28-005				
Central Connector	M6	20-704					
		20-705					
Profile-to-Wall	M8	20-015				20-015	
	5/16-18	25-015				25-015	
Self-Tapping		20-019					
Miter Connector	Variable HD	20-022				25-024	
	90° Fixed		20-128	20-128			25-026

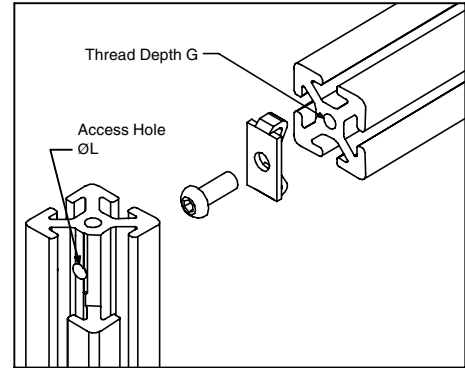
(1) Use 20-011 for 40 Series Pneumatic Applications

(2) Use 20-012 for 40 Series Pneumatic Applications

Standard



Series	G	H*	K	L
40	16	40	20	7
30	16	30	15	7
28	16	28	14	7
20	10	20	10	4.3
1.5"	0.75"	1.5"	0.75"	0.281"
1"	0.625"	1"	0.5"	0.219"



*All dimensions in mm unless otherwise noted.
H dimension is required when using multiple T-slot profiles.

Application

This is the primary fastening method used to join two pieces of profiles together.

The fastener couples with the taper in the T-Slots to create an extremely rigid joint. The tabs on the fastener align the profiles and provide anti-rotational support.

Technical Data

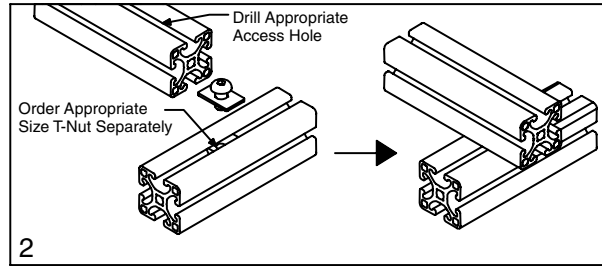
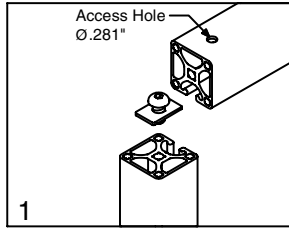
- Plate
- Std - Steel, Zinc Plated
- SS - Stainless Steel
- SAE - Steel, Zinc Plated w/ SAE hardware

Note: You must use 20-028 Flat Standard Fastener or 20-144/25-014 Single Tab Standard Fastener set on closed face profiles.

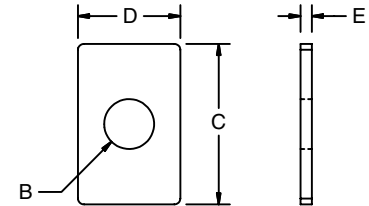
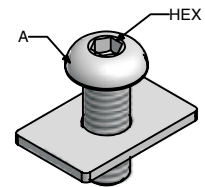
Ordering Information

Profile Series	Type	Dimensions							Torque Nm (in-lb)	Weight (g)	Part #*
		A	Hex	B	C	D	E	F			
40	Std	M8x18*	5	36	7.8	17	11	2.9	25 (220)	25	20-002
	SS	M8x18*	5	36	7.8	17	11	2.9	20 (180)	21	20-002SS
	SAE	5/16-18 x 3/4"	3/16"	36	7.8	17	11	2.3	25 (220)	25	25-003
	SAE SS	5/16-18 x 3/4"	3/16"	36	7.8	17	11	2.3	25 (220)	25	25-003SS
	S End	5/16-18 x 3/4"	3/16"	27	7.6	14	13	2.3	25 (220)	21	25-014
	S End	M8x18	5	27	7.8	17	11	2.3	25 (220)	21	20-144
	Flat Std	M8x18	5	27	—	17	11	2	25 (220)	41	20-028
	SAE Flat	5/16-18 x 5/8"	3/16"	27	—	17	11	2	25 (220)	21	25-028
30/28	Std	M8x18	5	23.7	7.8	16	8.9	1.9	25 (220)	15	20-003
	SS	M8x18	5	23.7	7.8	16	8.9	1.9	20 (180)	14	20-003SS
	S End	M8x18	5	21	7.8	14	8.9	1.9	25 (220)	15	20-143
20	Std	M5x12	3	4.8	4.8	10	4.5	1.1	4.5 (40)	5	20-021
1.5"	Std	5/16-18 x 3/4"	3/16"	1.42"	0.307"	0.669"	0.433"	0.114"	25 (220)	25	25-003
	SS	5/16-18 x 3/4"	3/16"	1.42"	0.307"	0.669"	0.433"	0.114"	25 (220)	25	25-003SS
	S End	5/16-18 x 3/4"	3/16"	1.05"	0.300"	0.550"	0.510"	0.090"	25 (220)	21	25-014
	Flat	5/16-18 x 3/4"	3/16"	1.30"	0.307"	0.669"	0.433"	0.090"	25 (220)	21	25-028
1"	Std	1/4-20 x 5/8"	5/32"	0.795	0.250	0.520	0.300	0.060	20 (180)	13	25-022

*Fastening plates may be ordered without a screw by adding "Z1" to part number, i.e. 20-002Z1.



Flat Plate



20-028
25-028

Application

This fastening set is suitable for connecting two profiles at 90° when a standard fastener cannot be used. It can also be used to connect two profiles where no end hole is available (see detail 2).

Technical Data

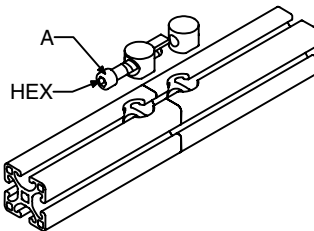
Plate: Steel, Zinc Plated

Ordering Information

Profile Series	A	HEX	B	C	D	E	Torque Nm (in-lb)	Wgt.	Part #
40	M8 x 18	5	8	27	17.5	2	25 (220)	13 g	20-028
1.5"	5/16-18 x 5/8"	3/16"	0.31"	1.06"	0.677"	0.075"	25 (220)	13 g	25-028

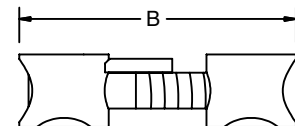
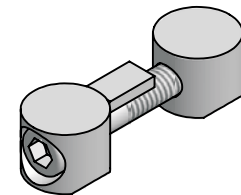
For 28 Series order:

Flat Plate Only **20-028Z1**
M8x10 BHCS Screw **24-110-8**



* All fastener dimensions and servicing dimensions for butt-fasteners are the same as the corresponding universal fastener.

Butt-Fastening



20-006
20-012
25-016
25-017

Application

For joining profiles end to end. Fastening dimensions and servicing are the same as corresponding universal fasteners.

Technical Data

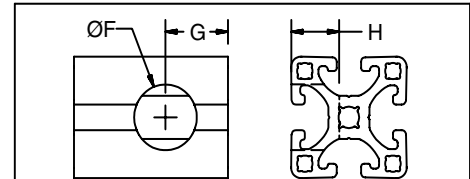
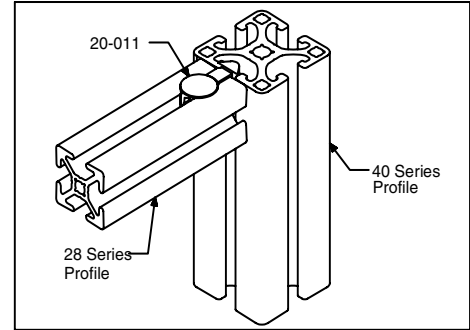
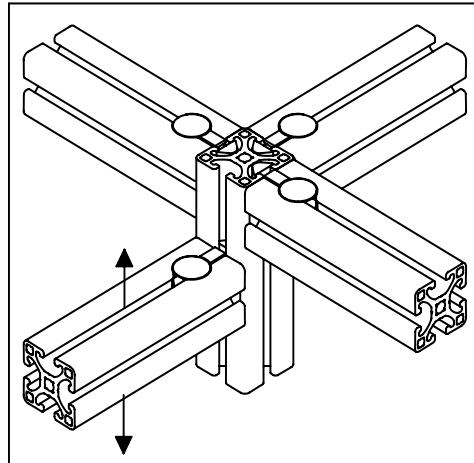
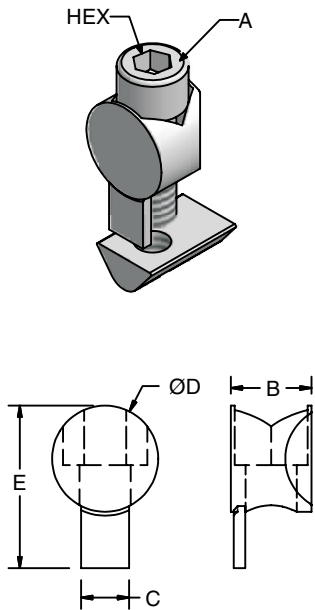
Plate: Zinc Cast, galvanized
Requires service part #19-015.

For 40 Series pneumatic applications use M6 fastener (20-012). See page 178.

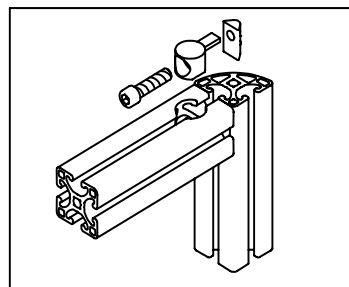
Ordering Information

Profile Series	Dimensions (mm)			Torque, Nm (lb-in)	Weight	Part #
	A	HEX	B			
40	M8 x 45	6	60	25 (220)	59 g	20-006
30 & 28	M6 x 50 & M6 Nut	5	60	14 (125)	45 g	20-012
1.5"	5/16-18 x 1 3/4"	3/16"	2.41"	25 (220)	59 g	25-016
1"	1/4-20 x 7/8"	5/32"	1.55"	13.5 (120)	40 g	25-017

Universal



Series	F	G	H
40	20	20	16
30	20	20	11
28	20	20	11
1.5"	0.813"	0.813"	0.625"
1"	0.563"	0.500"	0.430"



Application

For adjustable 90° profile connections. Ideal for retrofits and additions to existing frames.

Fastening set 20-011 is used to connect 28 Series to 40 Series profiles and for pneumatic applications. See page 178.

Fastening set 25-015 is used for connecting 1.5" Series to other parts without T-slots. (See page 108 for corner element examples.)

Technical Data

Zinc Cast, galvanized

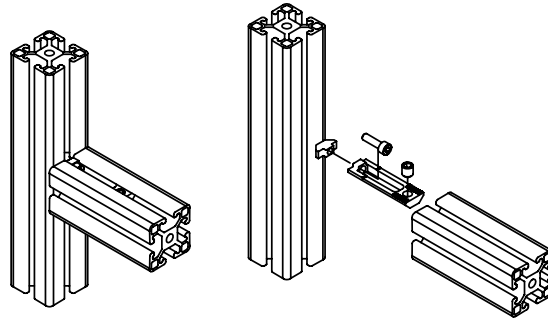
Includes screw and T-Nut

Requires service part #19-015.

Ordering Information

Series	A (SHCS)	Hex	B	C	D	E	Torque Nm (in-lb)	Wt. (g)	Part #
40,	M8x30	6	16	8	20	33.8	25 (220)	41	20-004
1.5"	5/16-18 x 1 1/4"	3/16"	16	8	20	33.8	25 (220)	41	25-004
28	M6x27	5	11	8	20	31.3	14 (125)	30	20-005
28 to 40	M6x30	5	11	8	20	33.5	14 (125)	36	20-011
30	M6x27	5	11	8	20	31.3	14 (125)	31	20-008
1"	1/4-20 x 3/4"	5/32"	10.7	6.4	14	21.5	13 (120)	25	25-023
Universal Zinc Casting 40 (40 Series without T-Nut or Screw)									20-004Z1
Universal Zinc Casting 28 (28 Series without T-Nut or Screw)									20-005Z1

* Fastening plates may be ordered without a screw by adding "Z1" to the part number, i.e. 20-004Z1



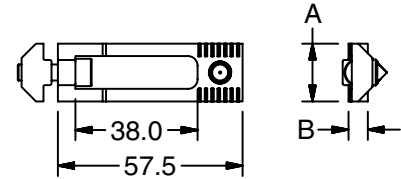
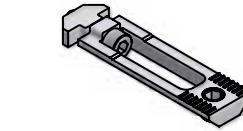
Milling Connector

Application

For adjustable 90° profile connections. Milling Connectors allow the connection of two profiles without additional machining.

Technical Data

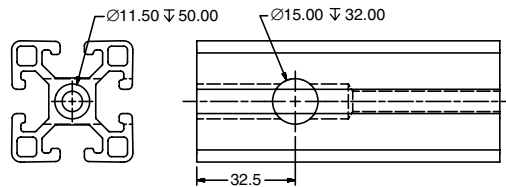
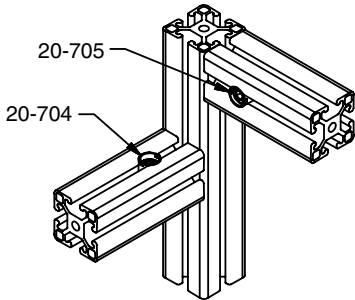
Plate: Steel, Zinc Plated
Includes screw and T-nut.



Ordering Information

Profile Series	A	B	Weight (g)	Part #
40, 1.5"	18	6.8	37.3	28-004
30	16	6.3	31.7	28-005

28-004
28-005



Central Connector

Application

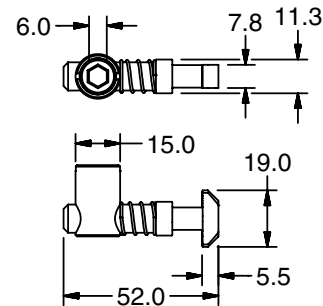
For adjustable 90° profile connections. Central Connectors allow the connection of two profiles. A step drill operation (19-015) is required to one of the profiles in addition to an end drill (19-014) to accommodate the barrel and tightening screw.

Technical Data

Plate: Steel, Zinc Plated
Requires services 19-014 and 19-015.
See detail above.



20-704



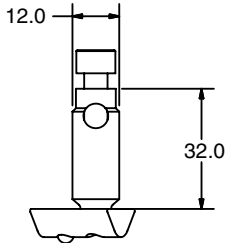
Ordering Information

Description	Unit	Weight	Part #
Hammer Perpendicular to Barrel	Each	49 g	20-704
Hammer Parallel to Barrel	Each	49 g	20-705

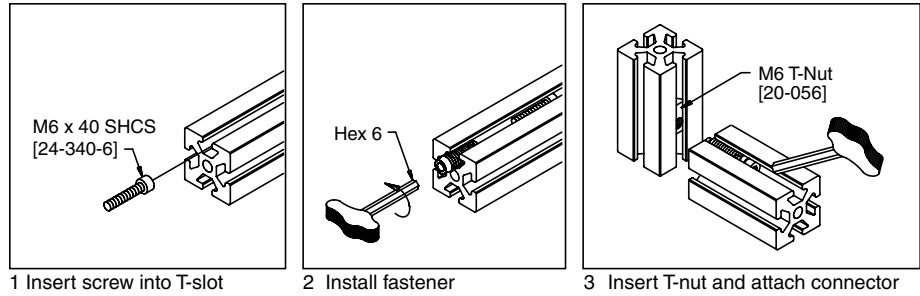


20-705

Self Tapping Connector



20-019



Application

For right angle attachment of 40 and 1.5" Series Profiles. No servicing is required making it ideal for retrofitting existing structures.

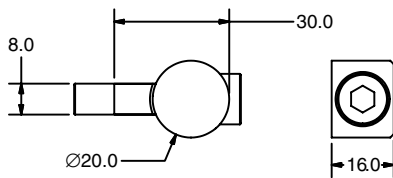
Ordering Information

Description	Unit	Weight	Part #
Self Tapping Connector 40/1.5"	1 Set	34 g	20-019

Technical Data

Steel
Torque: 14 Nm (125 in-lb)
Threads – Left Handed

Profile to Wall Fastening Set



20-015

Application

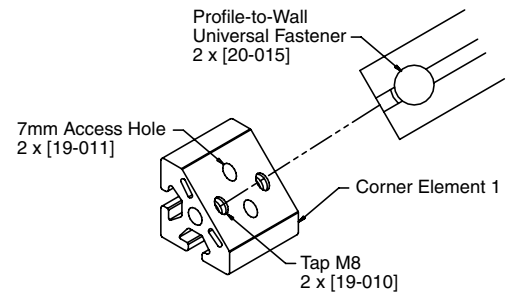
Designed for connecting 40 and 1.5" Series profiles to parts without T-Slots such as corner elements or reversing units.

Technical Data

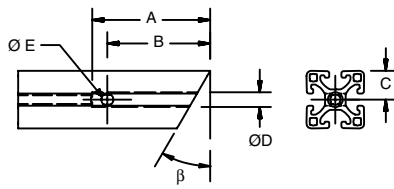
Plate: Steel, Zinc Plated
Requires service part #19-015.

Ordering Information

Profile Series	Dimensions						Torque Nm (in-lb)	Weight (g)	Part #
	A	HEX	B	C	D	E			
40	M8x30 SHCS	6	16	8	20	30	25 (220)	32	20-015
1.5"	5/16-18 x 1 1/4"	3/16"	0.630"	0.315"	0.787"	1.18"	20 (180)	32	25-015



Profile to wall casting without screw or washer **20-015Z1**

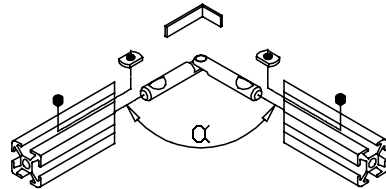
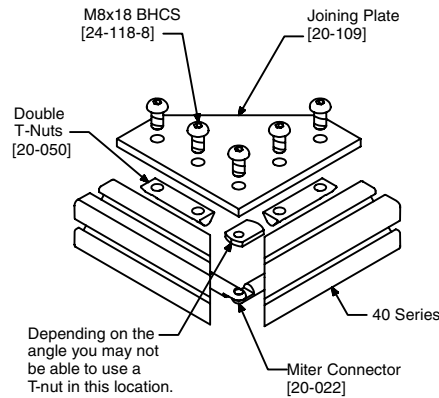


40 Series
 $\beta = 90^\circ - \alpha/2$
 $A = 45 + C \tan \beta$
 $B = 35 + C \tan \beta$
 $D = 9.6$
 $E = 8$

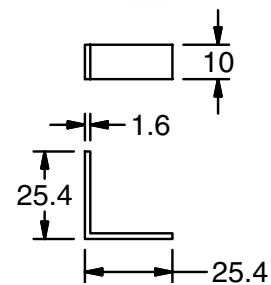
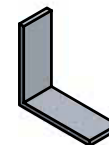
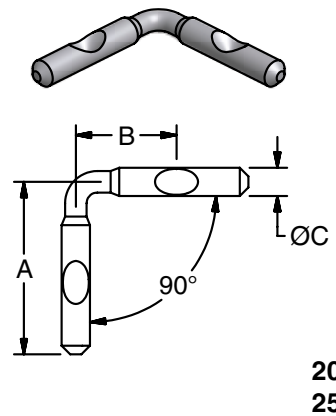
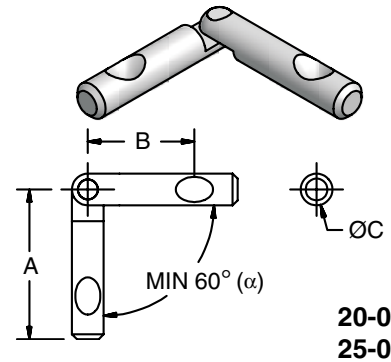
1.5" Series
 $\beta = 90^\circ - \alpha/2$
 $A = 1.77" + C \tan \beta$
 $B = 1.38" + C \tan \beta$
 $D = 0.386"$
 $E = 0.313"$

28 Series
 $\beta = 90^\circ - \alpha/2$
 $A = 38 + C \tan \beta$
 $B = 25.5 + C \tan \beta$
 $D = 6.8$
 $E = 6$

1" Series
 $\beta = 90^\circ - \alpha/2$
 $A = 1.50" + C \tan \beta$
 $B = 1.00" + C \tan \beta$
 $D = 0.266"$
 $E = 0.250"$



Miter Connectors



20-127

Application

Variable angle connectors are available for 40 and 1.5" series profiles.

Fixed 90° connectors are available for 28, 30 and 1" Series Profiles.

Miter Bracket (20-127) prevents twisting.

Not for use as a structural fastener.
Secure with joining plates as necessary.

Technical Data

Connector: Steel, Zinc Plated

Miter Bracket: Aluminum, Anodized

Sets include necessary T-nuts and cone point screws.


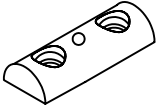

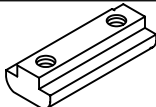


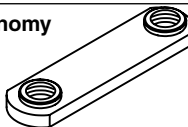

Loctite® Thread Locker No. 262 is recommended to secure set screws.

Ordering Information

Series	Description	A	B	C	Unit	Weight	Part #
40	Variable	45	32	9.53	1 Set	67 g	20-022
28,30	Fixed 90°	37	23.4	6.57	1 Set	31 g	20-128*
1.5"	Variable	1.77"	1.260"	0.375"	1 Set	67 g	25-024
1"	Fixed 90°	1.46"	0.92"	0.26"	1 Set	31 g	25-026
All	Miter Bracket	See drawing			1 Pc	4 g	20-127

*Fixed 90° Miter Connector only 1 Pc 20-128Z1

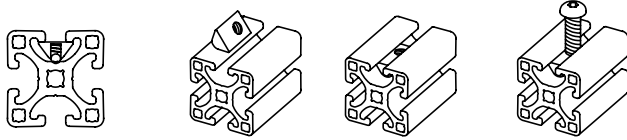
Quick Reference

Type	Thread Size	40 Series	30 Series	28 Series	20 Series	1.5" Series	1" Series
Standard T-Nut 	M4	20-051			20-044	20-051	
	M5	20-052	20-052		20-045	20-052	
	M6	20-056 (SS)	20-056 (SS)	20-055		20-056 (SS)	
	M8	20-058 (SS)	20-058 (SS)	20-057		20-058 (SS)	
	#10-32	25-009	25-009			25-009	25-030
	1/4-20	25-001	25-001	25-055		25-001	25-031
	5/16-18	25-002	25-002	25-057		25-002	
Double T-Nut Standard 	M8	20-049 ⁽¹⁾	20-049 ⁽¹⁾			20-049	
	M8	20-050 ⁽²⁾	20-050 ⁽²⁾			20-050	
	M8 HD	20-063 ⁽³⁾				20-063 ⁽³⁾	
	5/16-18	25-041				25-041	
Self Aligning T- Nut	M5	20-065	20-065 ⁽⁴⁾	20-065 ⁽⁴⁾		20-065	
	M6	20-066	20-066 ⁽⁴⁾	20-066 ⁽⁴⁾		20-066	
	M8	20-068	20-068 ⁽⁴⁾	20-068 ⁽⁴⁾		20-068	
Heavy Duty T-Nut  Ret. Spring 20-0614 ⁽³⁾	M5	20-067				20-067	
	M6	20-060 ⁽³⁾				20-060 ⁽³⁾	
	M8	20-064 ⁽³⁾				20-064 ⁽³⁾	
	1/4-20	25-050				25-050	
	5/16-18	25-051				25-051	
Double Heavy Duty T-Nut 	M8	20-063				20-063	
	1/4-20	25-052				25-052	
	5/16-18	25-053				25-053	
Economy Standard T-Nut 	M5				20-085		
	M6	20-080	20-090 (SS)	20-090 (SS)		20-080	
	M8	20-081	20-091	20-091		20-081	
	#10-32	20-088				20-088	20-088
	1/4-20	20-083	20-093	20-093		20-083	25-034
	5/16-18	20-082	20-092	20-092		20-082	
	#10-24					20-086	
Economy Offset T-Nut 	M6		20-190	20-190			
	M8	20-181					
	#8-32	25-045				25-045	25-045
	1/4-20	20-193	20-193	20-193		20-193	
	5/16-18	20-182				20-182	
Double Economy T-Nut 	1/4-20					25-048	
	5/16-18	25-046 ⁽⁵⁾ 25-047 ⁽⁶⁾				25-046 ⁽⁵⁾ 25-047 ⁽⁶⁾	
T-Slot Nut Zn 	M3	20-033	20-036	20-036		20-033	
	M4	20-034	20-037	20-037		20-034	
	M5	20-035	20-038	20-038		20-035	

(1) 24mm hole centerline spacing
(2) 40 mm hole centerline spacing

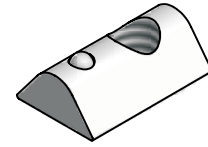
(3) 40/1.5" Series only, nut must be installed from profile end
(4) On 30 and 28 Series, nut must be installed from profile end

(5) 7/8" hole spacing
(6) 1" hole spacing



Standard T-nuts conveniently roll into profile T-slots at any location. The spring/ball locking feature keeps the T-nut in place in vertical applications.

T-Nuts St



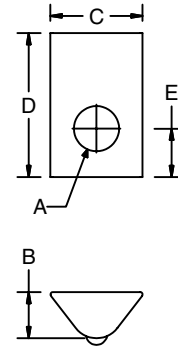
Application

Standard mounting elements for profiles. The T-Nut can be inserted into profile T-Slots at any location to provide an instant threaded hole for mounting accessories or connectors.

Technical Data

Steel, Black Zinc Plated or clear color varies.

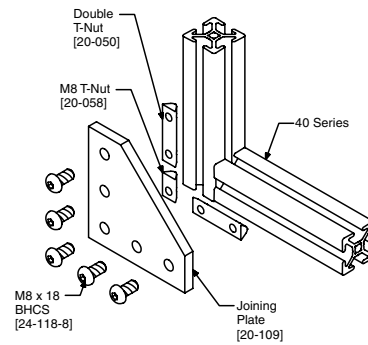
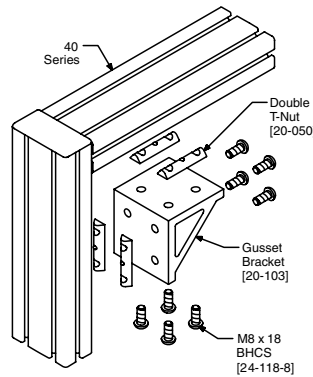
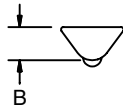
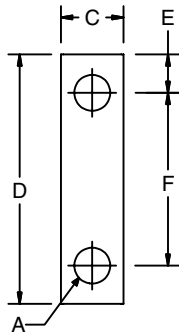
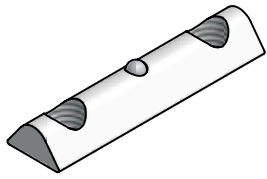
Parts designated with "SS" are stainless steel. Others may be available in stainless. Contact factory for availability.



Ordering Information

Profile Series	Dimensions (mm)					Weight (g)	Color	Part #
	A	B	C	D	E			
40, 30, 1.5"	M4	7.3	13.8	23	7.5	11	C	20-051
	M5	7.3	13.8	23	7.5	11	C	20-052
	M6	7.3	13.8	23	5.5	11	C	20-056
	M6 SS	7.3	13.8	23	6.5	11	C	20-056SS
	M8	7.3	13.8	23	7.5	10	C	20-058
	M8 SS	7.3	13.8	23	6.5	11	C	20-058SS
	1/4-20	7.3	13.8	23	7.5	10	B	25-001
	5/16"-18	7.3	13.8	23	7.5	9	C	25-002
28	#10-32	7.3	13.8	23	7.5	10	C	25-009
	M6	6	13.8	23	7	10	C	20-055
	M8	6	13.8	23	7	10	C	20-057
	1/4-20	6	12.9	23	7	10	B	25-055
20	5/16-18	6	12.9	23	7	10	B	25-057
	M4	4	8	23	4	1	C	20-044
1"	M5	4	8	11.5	4	1	C	20-045
	#10-32	0.200"	0.400"	0.625"	0.210"	0.21"	B	25-030
	1/4-20	0.200"	0.400"	0.625"	0.210"	0.21"	B	25-031

Double St



Application

Standard mounting element where fastening hardware requires two T-Nuts.

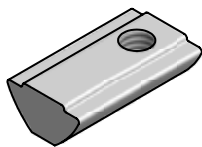
Technical Data

Metric T-Nuts: Steel, Clear Zinc Plated
Imperial T-Nuts: Steel, Black Zinc Plated

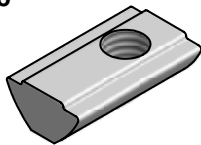
Ordering Information

Profile Series	Dimensions						Weight (g)	Part #
	A	B	C	D	E	F		
40, 30,	M8	7.3	13.8	38	7	24	15	20-049
1.5"	M8	7.3	13.8	55	7.5	40	23	20-050
	5/16-18	0.287"	0.543"	2.165"	0.333"	1.50"	23	25-041

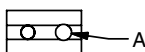
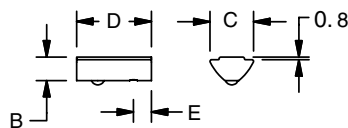
Self Aligning T-Nut



20-066



20-068



Application

Rolls into the T-Slot of 40 and 1.5" Series profiles at any location and held into position using a spring-loaded ball. The raised area fits into the T-Slot to prevent twisting. Should not be used where the raised area might interfere with other accessories such as tabs on universal fasteners, hinges, etc.

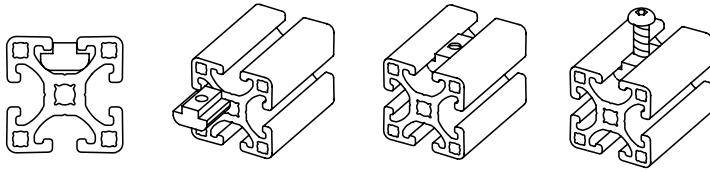
Technical Data

Steel, Zinc Plated
Fits 30 and 28 Series profiles but must be inserted from profile end.

Ordering Information

Profile Series	Dimensions (mm)					Weight (g)	Part #
	A	B	C	D	E		
40, 30*	M5	6.4	13.5	22	64	10	20-065
28* &	M6	6.4	13.5	22	6.4	10	20-066
1.5"	M8	6.4	13.5	22	6.4	10	20-068

*Fits 30 and 28 Series profiles but must be inserted from profile end.



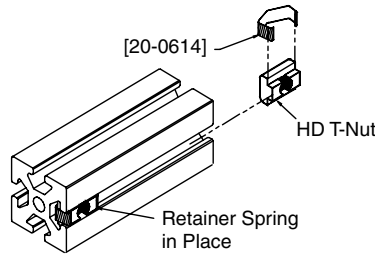
Heavy duty T-nuts must be inserted from the ends and slid to the desired location.

Application

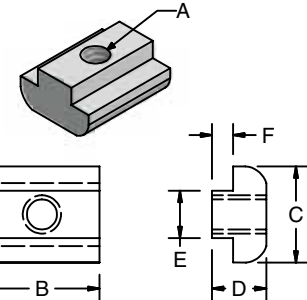
Heavy duty T-Slot Nut for 40 and 1.5" Series profiles. Recommended for mounting Roller Bearing Units.

Technical Data

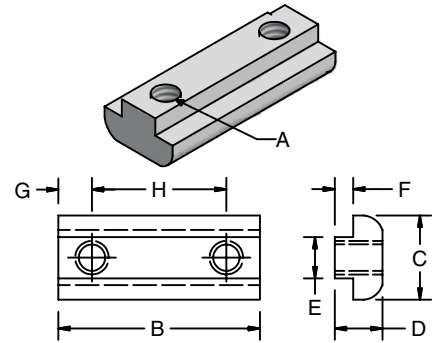
Steel Zinc Plated



Single & Double HD



Single



Double

Ordering Information

Style	Dimensions								Wt. (g)	Part #
	A	B	C	D	E	F	G	H		
Single	M5	22	16	8.8	7.9	3.5	—	—	13	20-067
	M6	20	16	8.8	7.9	3.5	—	—	13	20-060
	M8	20	16	8.8	7.9	3.5	—	—	13	20-064
	1/4-20	0.75"	0.63"	0.35"	0.31"	0.14"	—	—	14	25-050
	5/16-18	0.75"	0.63"	0.35"	0.31"	0.14"	—	—	13	25-051
Retainer Spring for HD Single T-Slot Nuts										20-0614
Double	M8	38	16	8.8	7.9	3.5	6	24	25	20-063
	1/4-20	1.50"	0.63"	0.35"	0.31"	0.14"	0.25"	1.00"	28	25-052
	5/16-18	2.00"	0.63"	0.35"	0.31"	0.14"	0.25"	1.50"	32	25-053

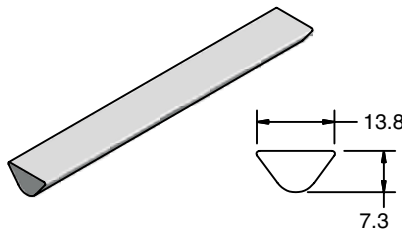
Application

Bar stock for custom length T-Nuts. Can be cut to length and tapped. Sold Each Length 500mm.

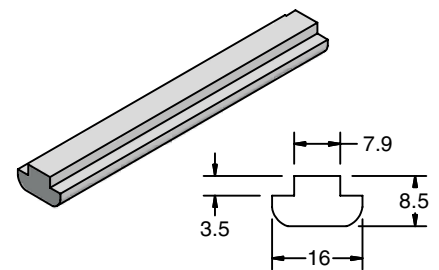
Technical Data

20-059 & 20-062

Steel - Max. tap hole: M8 (5/16")



20-059



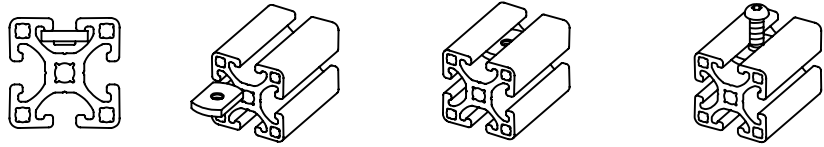
20-062

Ordering Information

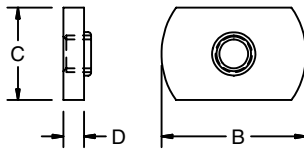
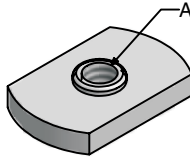
Series	Description	Unit	Weight	Part #
40, 30 and 1.5"	T-Slot Bar HD	Each	0.42 kg	20-062
	T-Slot Bar St	Each	0.26 kg	20-059



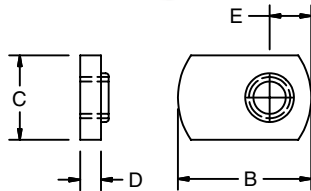
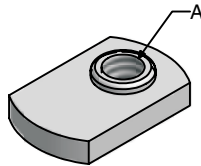
Economy



Economy T-nuts must be inserted from the ends of the profiles and slid to the desired location. A compression spring can be added to help keep the T-nut in location.



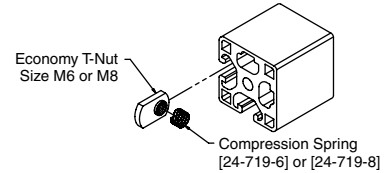
Standard



Offset

Application

Economical solution for fastening hardware or components to T-Slots. Economy T-Nuts slide into profile from the end to provide threaded hole for fastening. Available in standard or offset versions.



Technical Data

Metric T-Nuts: Steel, Clear Zinc Plated
Imperial T-Nuts: Steel, Black Zinc Plated
Parts designated with "SS" are stainless steel.

Ordering Information

	Profile Series	Dimensions (mm or inch)					Weight (g)	Part #
		A	B	C	D	E		
Standard	40, 1.5"	M6	25	16	3.6	-	10	20-080
		M8	25	16	3.6	-	10	20-081
		#10-32	22.5	11	2.4	-	5	20-088
		1/4-20	25	16	3.6	-	10	20-083
		5/16-18	25	16	3.6	-	10	20-082
	30, 28	M6	20.5	13	3.2	-	5	20-090
		M6	20.5	13	3.2	-	5	20-090SS
		M8	20.5	13	3.2	-	5	20-091
		1/4-20	20.5	13	3.2	-	5	20-093
		5/16-18	20.5	13	3.2	-	5	20-092
	20	#10-24	16	9.6	2.4	-	5	20-086
		M5	16	9.6	2.4	-	5	20-085
	1"	#10-32	0.885"	0.440"	0.09"	-	5	20-088
		1/4-20	1.00"	0.440"	0.09"	-	5	20-034
Offset	40, 1.5"	M8	25	16	3.6	7.1	10	20-181
		#8-32	16	11	2.4	4.8	5	25-045
		1/4-20	20.5	13	3.2	6.4	5	20-193
		5/16-18	25	16	3.6	7.1	10	20-182
	30, 28	M6	20.5	13	3.2	6.4	5	20-190
		1/4-20	20.5	13	3.2	6.4	5	20-193
	1"	#8-32	0.885"	0.440"	0.09"	0.19"	5	25-045

Description

Compression Spring for Economy T-Slot Nuts M6
Compression Spring for Economy T-Slot Nuts M8

Weight

4 g
4 g

Part

24-719-6*
24-719-8*

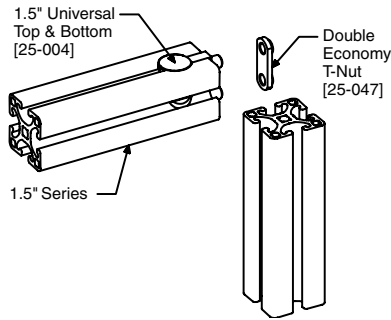
*Minimum order quantity = 100 pieces

Application

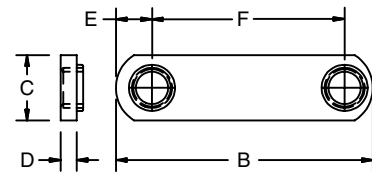
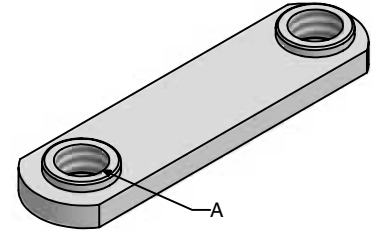
Double Economy T-Nuts are an economical solution for fastening accessories, double universal fasteners and the primary T-Nut to a cross connection.

Technical Data

Steel, Black Zinc Plated



Double Economy



**25-046
 25-047
 25-048**

Ordering Information

Profile Series	Dimensions						Weight	Part #
	A	B	C	D	E	F		
40, 1.5"	5/16-18	2.00"	0.51"	0.12"	0.22"	0.50"	20g	25-046
		1.38"	0.51"	0.12"	0.25"	0.88"	13 g	25-047
	1/4-20	1.50"	0.51"	0.12"	0.25"	1.00"	15g	25-048

Application

Universal mounting element that wedges into the profile when tightened. Can be inserted into the T-Slot at any position.

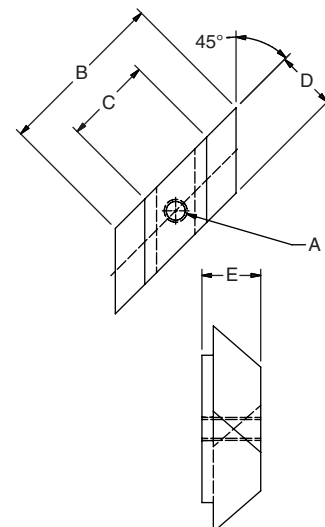
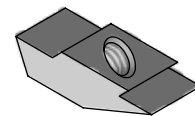
Technical Data

Zn Cast, Galvanized

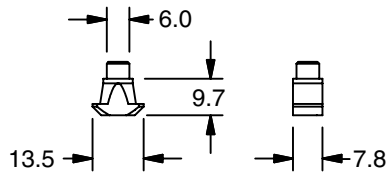
Ordering Information

Profile Series	Dimensions (mm)					Weight (g)	Part #
	A	B	C	D	E		
40/1.5"	M3	22	11	8	7.7	5	20-033
	M4	22	11	8	7.7	5	20-034
	M5	22	11	8	7.7	5	20-035
30, 28	M3	22	11	8	6	5	20-036
	M4	22	11	8	6	5	20-037
	M5	22	11	8	6	5	20-038

T-Nut Zn



Anodize Breaker



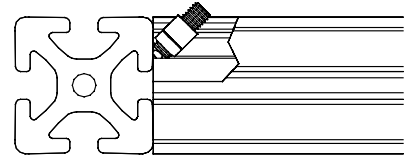
20-070

Application

Penetrates anodizing and provides ground continuity between 40, 30 and 1.5" Series profiles.

Technical Data

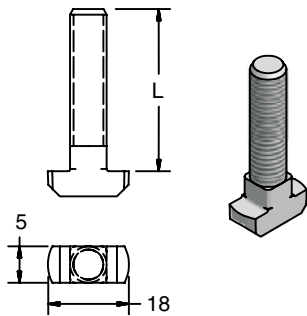
Steel, Galvanized
Dog point M6x12 set screw.



Ordering Information

Description	Unit	Weight	Part #
Anodize Breaker	Each	10 g	20-070

T-Bolt 40



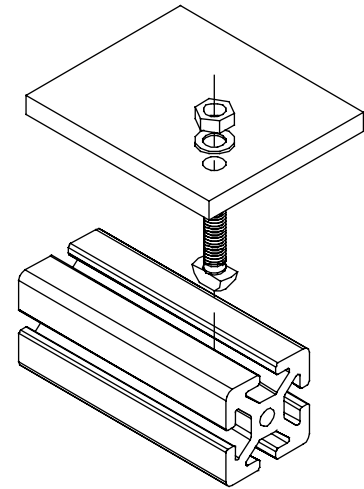
24-420-8
24-425-8
24-430-8
24-440-8

Application

Threaded stud with T-Slot head for insertion into T-Slot of 40 and 1.5" Series profiles. These will only fit in the standard profile.

Technical Data

Steel, Zinc Plated



Ordering Information

Description (Thread x L)	Unit	Weight	Part #
T-Bolt 40, M8x20	Each	1 g	24-420-8
T-Bolt 40, M8x25	Each	1 g	24-425-8
T-Bolt 40, M8x30	Each	2 g	24-430-8
T-Bolt 40, M8x40	Each	2 g	24-440-8

Application

All profiles.

Technical Data

Steel, Zinc Plated

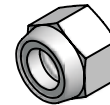
Nuts

Ordering Information

Description	Unit	Weight	Part #
M3 Hex Nut	Each	0.3 g	24-706-3
M4 Hex Nut	Each	0.5 g	24-706-4
M5 Hex Nut	Each	1 g	24-706-5
M6 Hex Nut	Each	2.5 g	24-706-6
M8 Hex Nut	Each	5 g	24-706-8
M10 Hex Nut	Each	11.6 g	24-706-10
M12 Hex Nut	Each	17.3 g	24-706-12
M14 Hex Nut	Each	25 g	24-706-14
M16 Hex Nut	Each	33 g	24-706-16
M6 Lock Nut	Each	3 g	24-716-6
M8 Lock Nut	Each	5 g	24-716-8
1/4-20 Hex Nut	Each	4.5 g	25-706-4
5/16-18 Hex Nut	Each	4.5 g	25-706-5
5/16-18 Lock Nut	Each	4.5 g	25-716-5
5/16-18 Flanged Serrated Nut	Each	4.5 g	25-726-5



Hex Nut



Lock Nut



Flanged
Serrated Nut

Application

All profiles.

Technical Data

Steel, Zinc Plated

Ordering Information

Description	Unit	Weight	Part #
M4 Flat Washer	Each	0.1 g	24-700-4
M5 Flat Washer	Each	0.3 g	24-700-5
M6 Flat Washer	Each	0.4 g	24-700-6
M8 Flat Washer	Each	1 g	24-700-8
M6 Lock Washer	Each	6 g	24-707-6
M8 Lock Washer	Each	9 g	24-707-8
M10 Lock Washer	Each	11 g	24-707-10
M8 Rib Spring Washer	Each	6 g	24-718-8
M8 Safety Spring Washer	Each	6 g	24-709-8
M8 Spring Washer	Each	3 g	24-708-8
M10 Spring Washer	Each	6 g	24-708-10
0' size M8/Flat Washer	Each	6 g	24-701-8
5/8" OD M6 Flat Washer	Each	2 g	24-711-6
#10-32 Flat Washer	Each	2.8 g	25-700-2
1/4" Flat Washer	Each	2.8 g	25-700-4
5/16" Flat Washer	Each	2.8 g	25-700-5
3/8" Flat Washer	Each	2.8 g	25-700-6
5/16" Lock Washer	Each	2.8 g	25-707-5



Flat Washer



Lock Washer



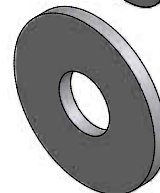
Rib Spring Washer



Safety Spring Washer



Spring Washer



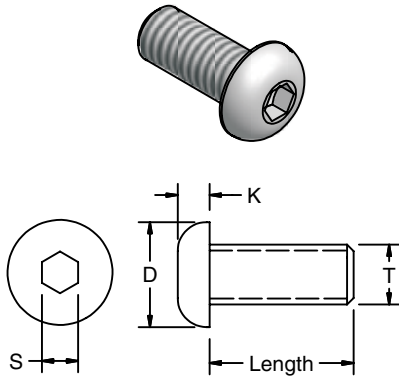
0' size M8/Flat Washer

Metric Screws

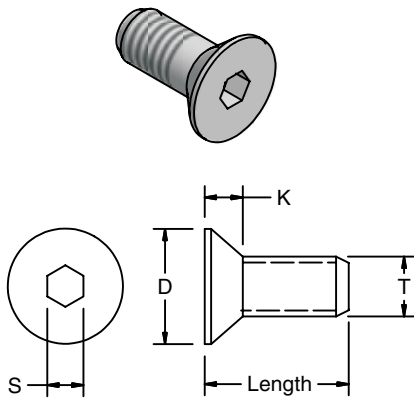
Part Number Example

Example would be a Button Head Screw M5x.08 at 20mm Long

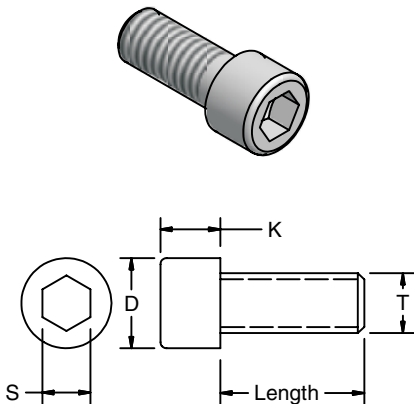
24 - 1 20 - 5



BUTTON HEAD



FLAT HEAD



SOCKET HEAD

Screw Type	Code
Button Head	1
Flat Head	2
Socket Head	3

Length (mm)	Code
8	08
10	10
12	12
14	14
16	16
18	18
20	20
22	22
25	25
27	27
28	28
30	30
35	35
40	40
45	45
50	50
60	60
80	80
90	90
100	100
120	120

Thread Type	Code
M3x.05	3
M4x0.7	4
M5x0.8	5
M6x1.0	6
M8x1.25	8
M10x1.5	10

Ordering Information

The chart on this page is to guide you in determining a part number from a specification. Verify that the part number created is a stocked item by using the chart on the next page or contacting your local representative.

Note: Only screw items listed by part number on the following pages are considered standard and are in stock. Non-stock items are special order with minimum quantity requirements.

Order Quantities: Order quantities are per screw. Contact customer service for box quantity and high volume orders.

Technical Data

Finish will vary between Zinc plated or black oxide depending on style. Stainless Steel is available on selected styles. Check with your local Service Center or current Price List

METRIC SCREW DIMENSIONS (mm)

Thread	Button Head			Flat Head			Socket Head		
	D*	K*	S	D*	K	S	D*	K*	S
M3	5.7	1.65	2	6	1.7	2	5.5	3	2.5
M4	7.6	2.2	2.5	8	2.3	2.5	7	4	3
M5	9.5	2.75	3	10	2.8	3	8.5	5	4
M6	10.5	3.3	4	12	3.3	4	10	6	5
M8	14	4.4	5	16	4.4	5	13	8	6
M10	17.5	5.5	6	20	5.5	6	16	10	8

*MAX size listed.



Metric Screw Quick Reference

	Length	M3x.05	M4x0.7	M5x0.8	M6x1.0	M8x1.25	M10x1.5
Button Head Screws	8			24-108-5	24-108-6		
	10	24-110-3	24-110-4*	24-110-5 *	24-110-6 *	24-110-8 *	
	12			24-112-5 *	24-112-6 *	24-112-8 *	
	14			24-114-5	24-114-6	24-114-8	
	16			24-116-5*	24-116-6 *	24-116-8 *	
	18					24-118-8 *	
	20			24-120-5 *	24-120-6 *	24-120-8 *	24-120-10
	25			24-125-5 *	24-125-6 *	24-125-8 *	24-125-10
	28					24-128-8	
	30			24-130-5 *	24-130-6 *	24-130-8	24-130-10 *
	35			24-135-5	24-135-6 *	24-135-8	
	40				24-140-6	24-140-8 *	24-140-10
	45			24-145-5		24-145-8	
	50					24-150-8	
	60				24-160-6	24-160-8	
80					24-180-8		
Flat Head Screws	8		24-208-4		24-208-6		
	10	24-210-3		24-210-5	24-210-6 *	24-210-8	
	12		24-212-4	24-212-5 *	24-212-6 *	24-212-8 *	
	14		24-214-4SS		24-214-6	24-214-8	
	16	24-216-3	24-216-4	24-216-5	24-216-6 *	24-216-8 *	
	18				24-218-6	24-218-8	
	20		24-220-4		24-220-6 *	24-220-8 *	
	25		24-225-4	24-225-5	24-225-6 *	24-225-8	
	30			24-230-5	24-230-6	24-230-8 *	
	35				24-235-6		
45					24-245-8		
Socket Head Screws	8		24-308-4				
	10		24-310-4		24-310-6	24-310-8	
	12	24-312-3	24-312-4	24-312-5 * †	24-312-6	24-312-8 *	
	14		24-314-4		24-314-6		
	16		24-316-4 *		24-316-6	24-316-8 *	
	18				24-318-6		
	20		24-320-4	24-320-5	24-320-6 *	24-320-8 *	
	25				24-325-6 *	24-325-8 *	
	27				24-327-6		
	30				24-330-6	24-330-8 *	
	35				24-335-6	24-335-8	
	40				24-340-6	24-340-8	
	45				24-345-6	24-345-8 *	
	50				24-350-6	24-350-8	
	80				24-380-6	24-380-8	
90				24-390-6			
100					24-3100-8		
120				24-3120-6			

* These items are available in Stainless Steel. Add "SS" to the end of the Part #.

† Low head

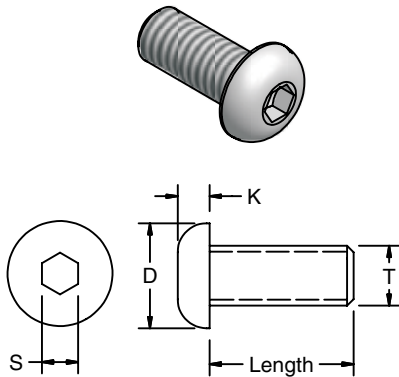


Imperial Screws

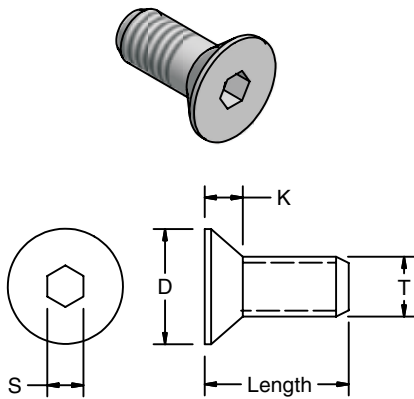
Part Number Example

Example would be a Button Head Cap Screw 5/16-18 x 3/4" long.

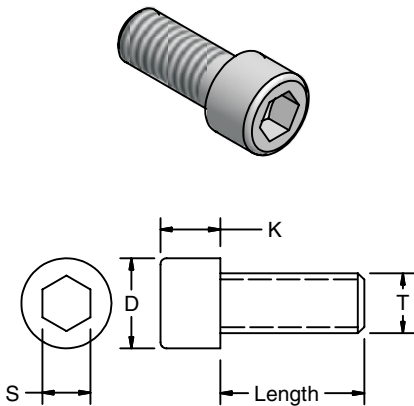
25 - 1 12 - 5



BUTTON HEAD



FLAT HEAD



SOCKET HEAD

Screw Type	Code
Button Head	1
Flat Head	2
Socket Head	3

Ordering Information

The charts on this page are to guide you in developing the appropriate part number to order the screw. Verify that the part number created is a stocked item by using the chart on the next page or contacting your local representative.

Note: Only screw items listed by part number on the following pages are considered standard and are in stock. Non-stock items are special order with minimum quantity requirements.

Order Quantities: Order quantities are per screw. Contact customer service for box quantity and high volume orders.

Length (in)	Code
1/8	02
3/16	03
1/4	04
5/16	05
3/8	06
7/16	07
1/2	08
9/16	09
5/8	10
11/16	11
3/4	12
13/16	13
7/8	14
15/16	15
1	16
1 1/8	18
1 1/4	20
1 3/8	22
1 1/2	24
1 3/4	28
2	32

Thread Type	Code
#8-32	1
#10-32	2
1/4-20	4
5/16-18	5
3/8-16	6
1/2-13	8

Technical Data

The standard finish on iSeries screws is Black Dicromate. Clear Zinc and stainless steel may be available on select styles.

Lengths shown in bold are industry standards for all threads.

ENGLISH SCREW DIMENSIONS (in)

Thread	Button Head			Flat Head			Socket Head		
	D*	K*	S	D*	K	S	D*	K*	S
#8-32	0.312	0.087	3/32	0.311	0.112	3/32	0.270	0.164	9/64
#10-32	0.361	0.101	1/8	0.359	0.127	1/8	0.312	0.190	5/32
1/4-20	0.437	0.132	5/32	0.480	0.161	5.32	0.375	0.250	3/16
5/16-18	0.547	0.166	3/16	0.600	0.198	3/16	0.469	0.312	1/4
3/8-16	0.656	0.199	7/32	0.720	0.234	7/32	0.562	0.375	5/16
1/2-13	0.875	0.265	5/16	0.872	0.251	5/16	0.750	0.500	3/8

*MAX size listed.



Imperial Screw Quick Reference

Type	Length	#8-32	#10-32	1/4-20	5/16-18	3/8-16
Button Head Screws	3/8"	25-106-1	25-106-2	25-106-4	25-106-5	
	1/2"	25-108-1	25-108-2	25-108-4	25-108-5	
	5/8"	25-110-1	25-110-2	25-110-4	25-110-5	
	3/4"		25-112-2	25-112-4	25-112-5 *	
	7/8"			25-114-4	25-114-5	
	1"				25-116-5	
	1 1/8"				25-118-5	
	1 1/4"				25-120-5	25-120-6
	1 1/2"				25-124-5	
	1 3/4"				25-128-5	
Flat Head Screws	1/2"		25-208-2	25-208-4		
	5/8"			25-210-4	25-210-5	
	3/4"			25-212-4	25-212-5	
Socket Head Screws	1/2"	25-308-1			25-308-5	
	5/8"	25-310-1		25-310-4	25-310-5 *	
	3/4"			25-312-4	25-312-5	
	7/8"			25-314-4	25-314-5	
	1"			25-316-4	25-316-5	
	1 1/4"			25-320-4	25-320-5	
	1 3/4"				25-328-5	
	2"				25-332-5	

* These Items are available as both Black Dicromate Finish and Stainless Steel.
Add "SS" to the end of the part # for stainless steel.

Set Screws (Hexagon Socket)

Application

All profiles.

Technical Data

Steel, Black Oxide

Ordering Information

24-5xx-xC



24-5xx-xD



24-5xx-xF

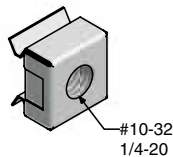


24-508-8U



Type	Description	Unit	Part #
Cone Point	M5 x 6	Each	24-506-5C
	M6 x 8	Each	24-508-6C
	M6 x 10	Each	24-510-6C
	M6 x 12	Each	24-512-6C
	M8 x 10	Each	24-510-8C
	M8 x 16	Each	24-516-8C
	1/4-20 x 3/8"	Each	25-506-4C
	5/16-18 x 5/8"	Each	25-510-5C
Dog Point	M6 x 12	Each	24-512-6D
	M8 x 30	Each	24-530-8D
Flat Point	M5 x 6	Each	24-506-5F
	M5 x 16	Each	24-516-5F
	M6 x 6	Each	24-506-6F
	M6 x 12	Each	24-512-6F
	M6 x 16	Each	24-516-6F
	M8 x 10	Each	24-510-8F
Cup Point	M10 x 25	Each	24-525-10F
	M8 x 8	Each	24-508-8U
	1/4-20 x 5/8"	Each	25-510-4U

Clip Nuts



20-075

20-076

25-075

25-076

Application

Square nut with clip attachment for 19" Rack Angle. Nut snaps into square holes for attaching panels and accessories.

Technical Data

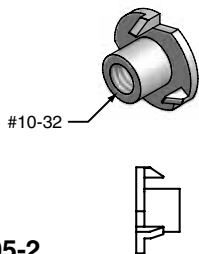
St., Zinc Plated

Weight 5g

Ordering Information

Description	Unit	Weight	Part #
Clip Nut M5	Each	4.5 g	20-075
Clip Nut M6	Each	4.5 g	20-076
Clip Nut #10-32	Each	4.5 g	25-075
Clip Nut 1/4-20	Each	4.5 g	25-076

High Cycle Nut



25-705-2

Application

Threaded insert nut used to create high cycle UHMW slide blocks.

Technical Data

Steel, Zinc Plated

Accepts #10-32 screw.

Ordering Information

Description	Unit	Weight	Part #
High Cycle Nut #10-32	Each	0.5 g	25-705-2

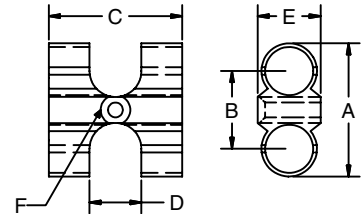
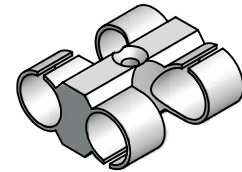
T-Clips

Application

Mounting element with two separate channels for fast, easy securing and routing of open wiring or tubing.

Technical Data

Glass Filled Nylon, Black
 Complete with screw and T-nut for 40 Series mounting.

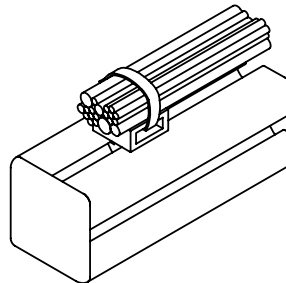


Ordering Information

Range (mm)	Dimensions (in)						Part #
	A	B	C	D	E	F	
6-8	20	12	20	8	9	3	22-206
8-10	25	15	24	10	12	4	22-208
10-13	31	18	28	12	12	4	22-210
13-16	35	21	36	14	17	4	22-212
16-19	44	25	43	17	20	5	22-215

Application

Mounting element provides point for cable tie mounting. Suitable for use on 40, 30, 28, 1.5" and 1" Series profiles.



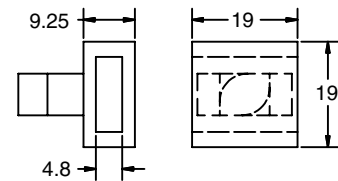
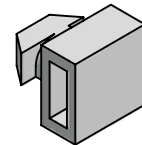
Technical Data

Glass Filled Nylon, Black
 Insert into T-slot and twist 90°

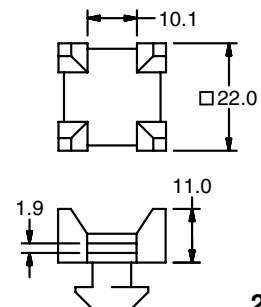
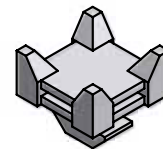
Ordering Information

Description	Unit	Weight	Part #
Cable Tie Holder, 40/1.5"	Each	4 g	22-202
Cable Tie Holder, 28/30	Each	4 g	22-201
Cross Cable Tie Holder, 40/1.5"	Each	4 g	27-202
Cross Cable Tie Holder, 1"	Each	4 g	27-203

Cable Tie Holder

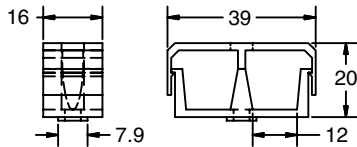
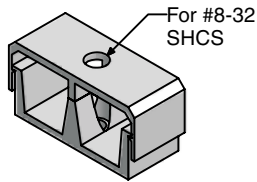


22-202
 22-201

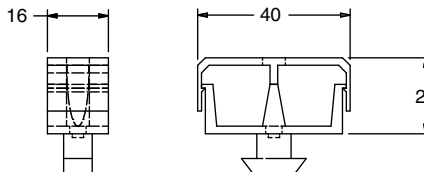
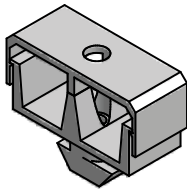


27-202
 27-203

Cable/Hose Holder



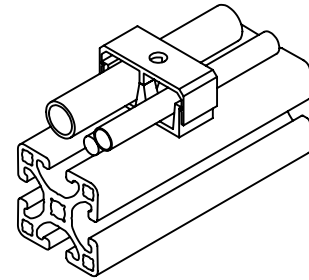
22-200
22-230



22-203

Application

Mounting element with two separate channels for routing open wiring or tubing along the profile surface



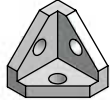
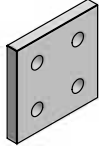
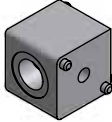

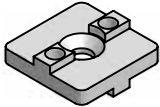
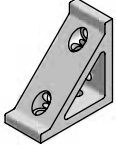

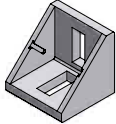
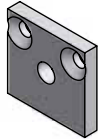

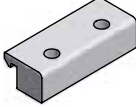
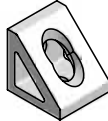
Technical Data

Glass Filled Nylon, Black
 Includes screw and T-Nut
 (12mm max dia.)

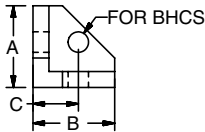
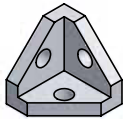
Ordering Information

Description	Unit	Weight	Part #
Cable/Hose Holder, 40 Series	Set	8 g	22-200
Cable/Hose Holder, 1.5" Series	Set	8 g	22-230
Cable/Hose Holder (Qtr. Turn Style)	Set	9 g	22-203

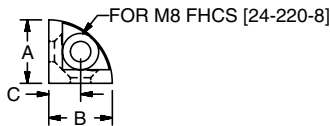
Section 3 Brackets, Gussets & Plates

Corner Brackets	98		Joining Plates	102-103	
Corner Connectors	99		Angle Brackets	104-105	
Cross Connector	100		Machined Gussets	106	
Angle Connector	100		Cast Gussets	107	
Mounting Plate	101		Corner Elements	108	
Clamp Block	101		Machined Corner Elements	109	

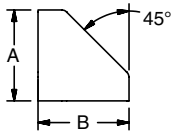
Corner Bracket



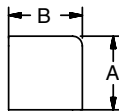
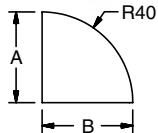
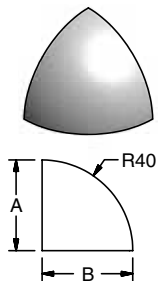
22-146
22-153



22-150

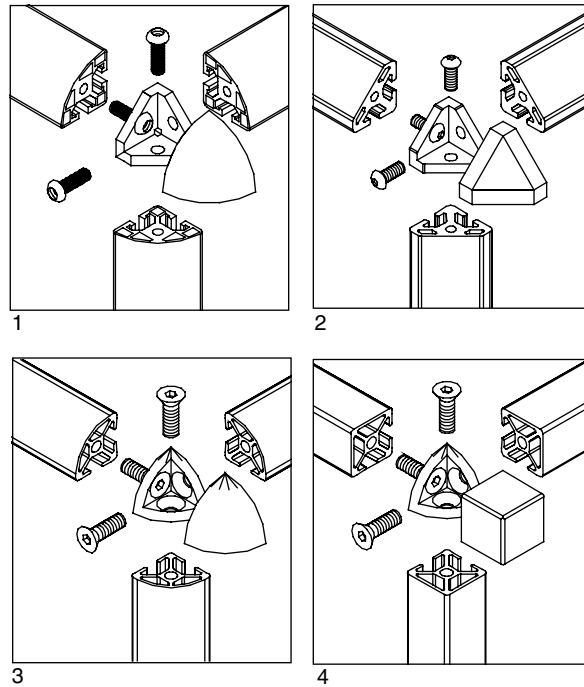


18-822



18-821
22-151
22-154

18-842
22-152



Application

Corner brackets are used for connecting 40,30 and 1.5" Series profiles at right angles. Ideal for construction of display cases, tables, cover hoods or anywhere a protected corner is desired. Caps are designed to match the contour of the profile.

Technical Data

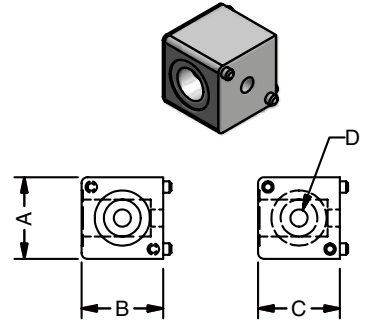
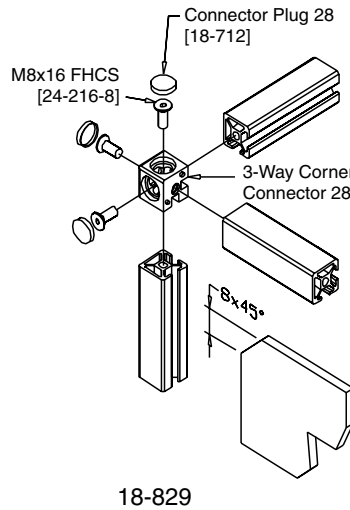
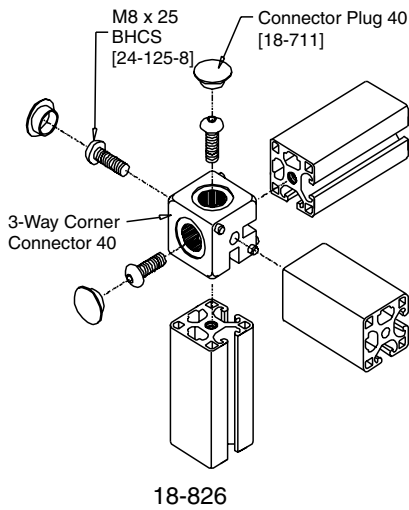
Bracket: Die Cast Zinc
 End Cap: Glass-filled Nylon, Black
 Profile ends must be tapped for M8 (5/16-18) screws (included with set).

Ordering Information

Series	Description	A	B	C	Unit	Wt.	Part #
40	Corner Bracket	36	36	20	Set	120 g	22-146
	Radius Connector Cap	40	40	—	Each	8 g	18-821
	3x45° Connector Cap	40	40	—	Each	9 g	18-822
	Square Connector Cap	40	40	—	Each	15 g	18-842
30	Corner Bracket	28	28	15	Set	69 g	22-150
	Radius Connector Cap	30	30	—	Each	4 g	22-151
	Square Connector Cap	30	30	—	Each	7 g	22-152
1.5"	Corner Bracket	1.5"	1.5"	0.75"	Set	120g	22-153
	Radius Connector Cap	1.5"	1.5"	—	Each	8 g	22-154

* For Machining M8 Tap use part number 19-010 for each profile end

Corner Connector



18-826
 18-852
 18-872
 18-892
 18-902

Application

Corner connectors are ideal for use with closed face profiles. Suitable for clean room environments, they include access plugs to cover hardware.

Order all hardware separately

Series	2-Way	3-Way
40	(2) 24-125-8	(3) 24-125-8
30	(2) 24-216-8	(3) 24-216-8
28	—	(3) 24-216-8
20	(2) 24-112-5	(3) 24-112-5
1.5"	(2) 25-116-5	(3) 25-116-5
1"	(2) 25-112-4	(3) 25-112-4

Technical Data

40 Series

Block: Die-cast Aluminum, Silver Paint
 Plug: Nylon

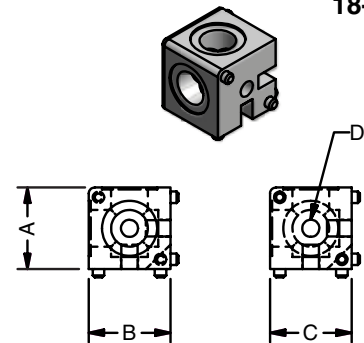
28 Series

Block: Aluminum, Black Anodized
 Plug: Acetal (Delrin)

20, 1" and 1.5" Series

Block: Die-cast aluminum, Silver Paint
 Plug: Nylon

Profile ends must be tapped for screws.
 Hardware not included.



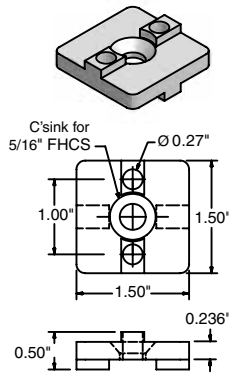
18-827
 18-829
 18-853
 18-873
 18-893
 18-903

Ordering Information

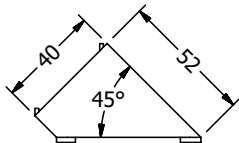
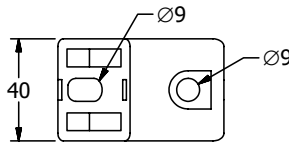
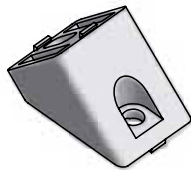
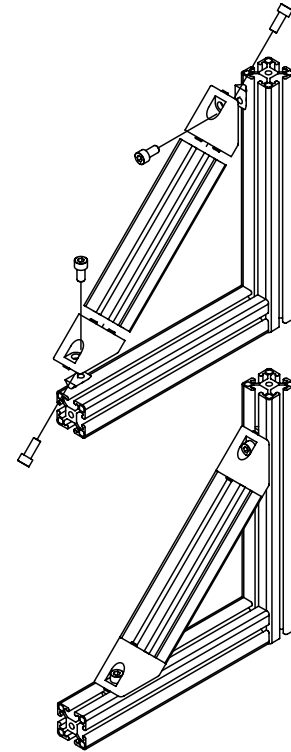
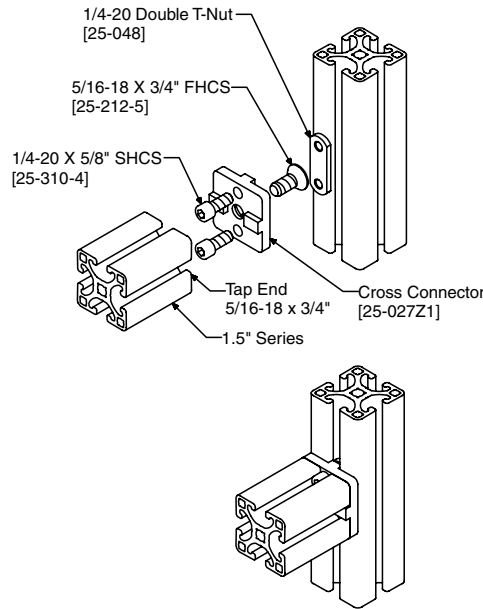
Series	Description	A	B	C	D	Unit	Weight	Part #
40	2-Way	40	40	40	M8 BHCS	Set	26 g	18-826
	3-Way	40	40	40	M8 BHCS	Set	26 g	18-827
30	2-Way	30	30	30	M8 FHCS	Set	47 g	18-902
	3-Way	30	30	30	M8 FHCS	Set	47 g	18-903
28	3-Way	28	28	28	M8 FHCS	Set	25 g	18-829
	Access Plug	—	—	—	—	Each	1 g	18-712
20	2-Way	20	20	20	M5 BHCS	Set	13 g	18-852
	3-Way	20	20	20	M5 BHCS	Set	10 g	18-853
1.5"	2-Way	1.5"	1.5"	1.5"	5/16-18 BHCS	Set	105 g	18-892
	3-Way	1.5"	1.5"	1.5"	5/16-18 BHCS	Set	91 g	18-893
1"	2-Way	1"	1"	1"	1/4-20 BHCS	Set	30 g	18-872
	3-Way	1"	1"	1"	1/4-20 BHCS	Set	26 g	18-873

* For Machining Tap use part number 19-010 for each profile end.

Profile Connectors



25-027



27-600

Application

The cross connector and angle connector are bracket style connectors that allow you to connect 40 or 1.5" Series profiles together with minimal servicing. You can cut the profile to length, tap one end of the profile and be able to join two pieces of profile together.

Technical Data

25-027

Zinc Cast, Clear Zinc Plate Finish

All fasteners included. To order plate only, add Z1 at end of part number.

27-600

Zinc Cast, Clear Paint

Order fasteners separately.

Recommended Hardware (Order Separately)

Part #	Series	Screws	T-Nut
27-600	40	(2) 24-320-8 (2) 24-316-8	(2) 20-058
	1.5"	(2) 25-312-5 (2) 25-310-5	(2) 25-002

Ordering Information

Series	Description	Unit	Weight	Part #
40/1.5"	Cross Connector, Double Tab	Each	55 g	25-027
40/1.5"	Angle Connector, 45°	Each	200 g	27-600

* For Machining M8 Tap, use part number 19-010 for each profile end.
 For machining 5/16-18 Tap, use part number 19-009 for each profile end.

Application

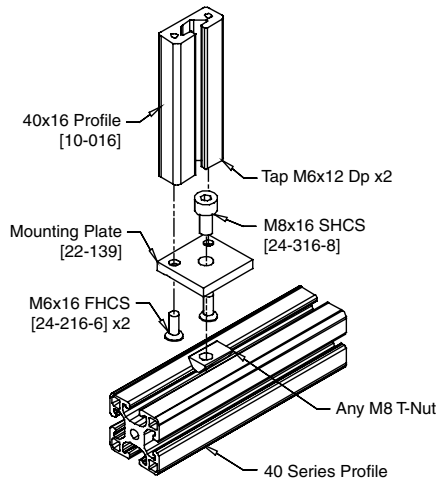
Designed to mount 40x16 profile (10-016) at 90° angle to any 40 or 1.5" Series profile.

Technical Data

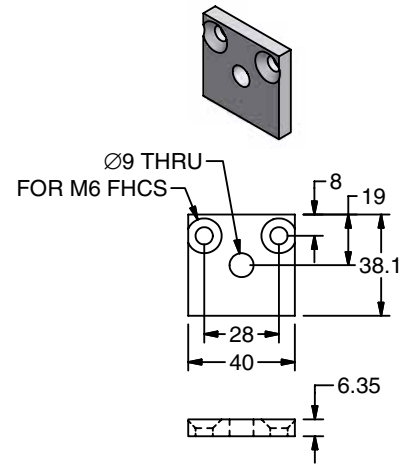
Aluminum, Clear Anodized

Requires the following hardware:

Screw	(1) 24-316-8
T-Nut	(1) 20-058
FHCS	(2) 24-216-6



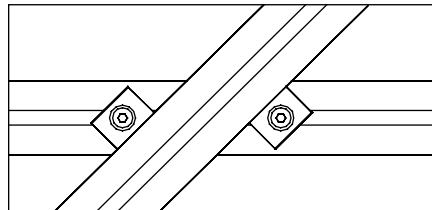
Mounting Plate



22-139

Ordering Information

Series	Description	Unit	Weight	Part #
40	Mounting Plate for 40x16 profile	Each	19 g	22-139



Application

Cost effective connection of 40 Series profiles stacked at intersecting angles. Not recommended for linear applications. Use in pairs to accomplish proper clamping.

Technical Data

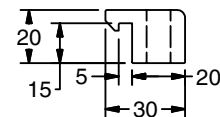
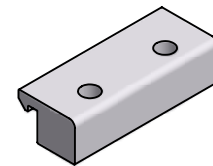
Aluminum, Clear Anodized

Requires the following hardware per hole:

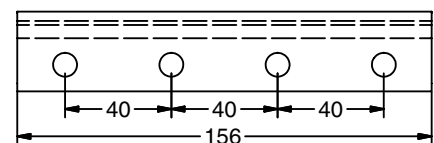
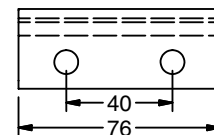
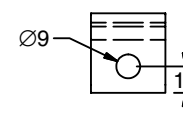
Screw	T-Nut
(1) 24-130-8	(1) 20-064

Ordering Information

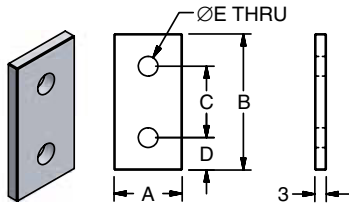
Series	Description	Unit	Weight	Part #
40	Clamp Block 1 (1 hole)	Each	0.03 kg	20-018-1
	Clamp Block 2 (2 holes)	Each	0.90 kg	20-018-2
	Clamp Block 4 (4 holes)	Each	0.17 kg	20-018-4



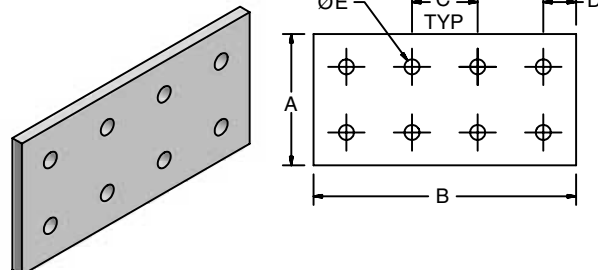
20-018-1
 20-018-2
 20-018-4



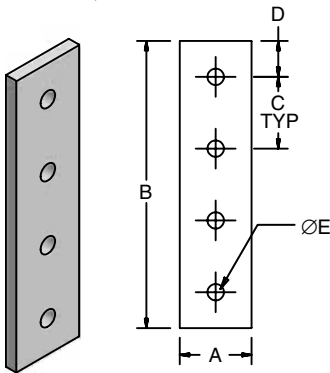
Straight



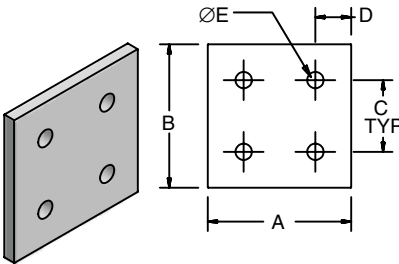
20-117
20-300, 20-310
22-140, 22-145



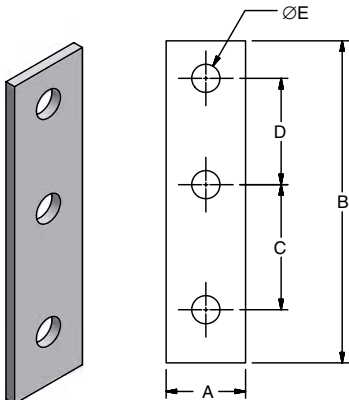
20-112
20-303
20-313



20-108
20-301, 20-310



20-111
20-118
20-302, 20-312



20-104

Application

Exterior joining plates for fastening profiles without servicing. Can also be used for additional strength on joints with fasteners.

Technical Data

Aluminum, Anodized,
40 Series: 6.4mm Thick
30/28 Series: 3.2mm Thick
1.5" and 1" Series: 0.25" Thick

Recommended Fasteners (Order Separately)

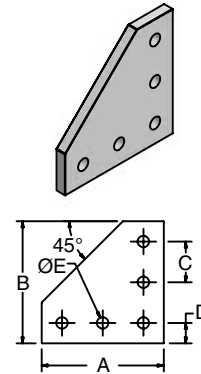
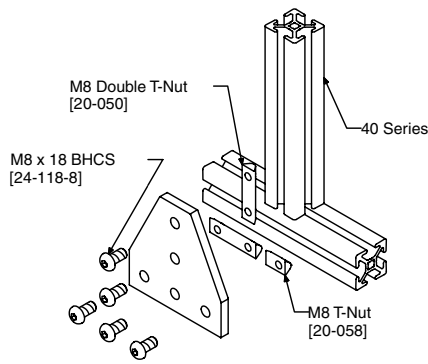
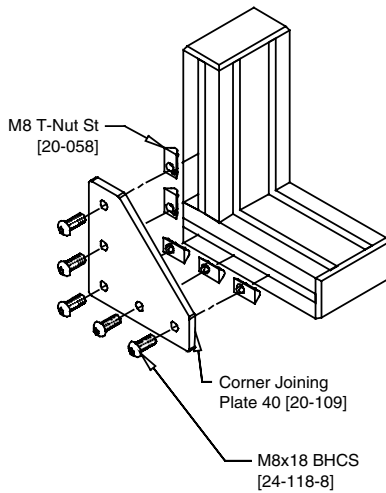
Series	Screws	T-Nuts	Double T-Nut (if applicable)
40	24-118-8	20-058	20-050
30	24-112-8	20-058	20-050
28	21-110-8	20-057	—
20	24-108-5	20-045	—
1.5"	25-110-5	25-002, 25-082 or 20-182	25-041 or 25-046
1"	25-108-4	25-031, 25-034 or 25-036	25-032 or 25-037

Ordering Information

Series	A	B	C	D	E	Unit	Weight	Part #
40	38	76	40	18	9	Each	40 g	22-140
	34	154	40	17	9	Each	86 g	20-108
	74	74	40	17	9	Each	90 g	20-111
	74	154	40	17	9	Each	188 g	20-112
30/28	25	54	28	13	9	Each	33 g	22-145
	25	103	40	34	9	Each	20 g	20-104
20	19	38	20	9	5.5	Each	7 g	20-117
	38	38	20	9	5.5	Each	11 g	20-118

Series	A	B	C	D	E	Unit	Weight	Part #
1.5"	1.50"	3.00"	1.50"	0.75"	0.34"	Each	45 g	20-300
	1.50"	6.00"	1.50"	0.75"	0.34"	Each	90 g	20-301
	3.00"	3.00"	1.50"	0.75"	0.34"	Each	95 g	20-302
	3.00"	6.00"	1.50"	0.75"	0.34"	Each	195 g	20-303
1"	1.00"	2.00"	1.00"	0.50"	0.28"	Each	18 g	20-310
	1.00"	4.00"	1.00"	0.50"	0.28"	Each	36 g	20-311
	2.00"	2.00"	1.00"	0.50"	0.28"	Each	36 g	20-312
	2.00"	4.00"	1.00"	0.50"	0.28"	Each	68 g	20-313

Corner & "T"



20-105
20-109
20-304
20-314

Application

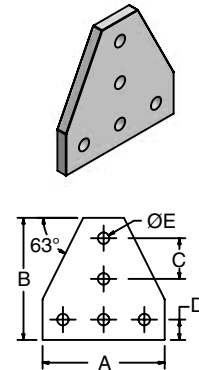
Exterior joining plates for fastening profiles without servicing. Can also be used for additional strength on joints with fasteners.

Technical Data

Aluminum, Anodized,
 40 Series: 6.4mm Thick
 30/28 Series: 3.2mm Thick
 1" and 1.5" Series: 0.25" Thick

Recommended Fasteners (Order Separately)

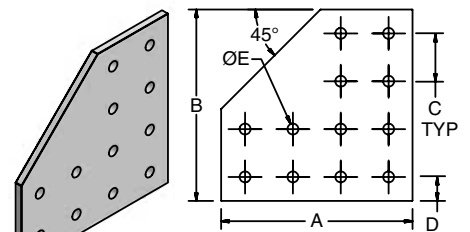
Series	Screws	T-Nuts	Double T-Nut (if applicable)
40	24-118-8	20-058	20-050
30	24-112-8	20-058	20-050
28	21-110-8	20-057	—
1.5"	25-110-5	25-002, 25-082 or 20-182	25-041 or 25-046
1"	25-108-4	25-031, 25-034 or 25-036	25-032 or 25-037



20-106
20-110
20-305
20-315

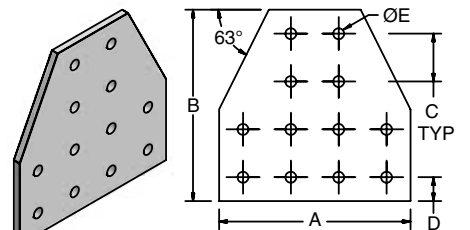
Ordering Information

Series	A	B	C	D	E	Unit	Weight	Part #
40	114	114	40	17	9	Each	163 g	20-109
	114	114	40	17	9	Each	163 g	20-110
	154	154	40	17	9	Each	341 g	20-113
	154	154	40	17	9	Each	341 g	20-114
30/28	80	80	28	12	9	Each	39 g	20-105
	80	80	28	12	9	Each	39 g	20-106



20-113
20-307

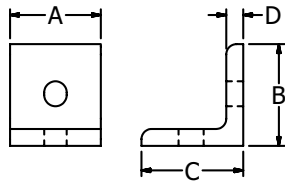
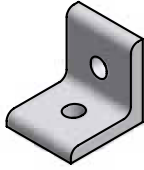
Series	A	B	C	D	E	Unit	Weight	Part #
1.5"	4.50"	4.50"	1.50"	0.75"	0.34"	Each	173 g	20-304
	4.50"	4.50"	1.50"	0.75"	0.34"	Each	173 g	20-305
	6.00"	6.00"	1.50"	0.75"	0.34"	Each	359 g	20-306
	6.00"	6.00"	1.50"	0.75"	0.34"	Each	359 g	20-307
1"	3.00"	3.00"	1.00"	0.50"	0.28"	Each	41 g	20-314
	3.00"	3.00"	1.00"	0.50"	0.28"	Each	41 g	20-315



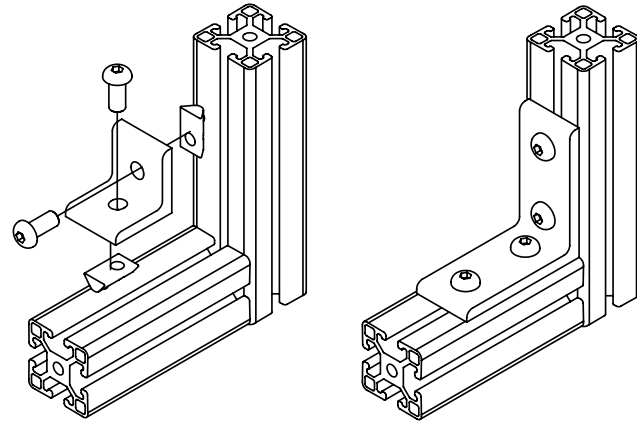
20-114
20-306



Angle Brackets



28-600
28-601
28-602

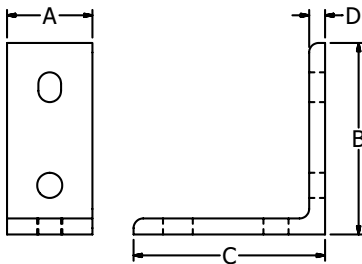
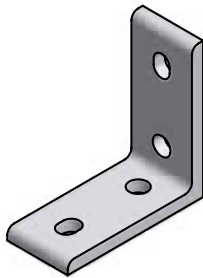


Application

Angle Brackets are used to fasten profiles together without any machining. Although it does not provide as solid a joint as other fastening methods, it allows flexibility for positioning and joining of profiles with no servicing.

Technical Data

Aluminum, Anodized



28-605
28-606

Recommended Fasteners (Order Separately)

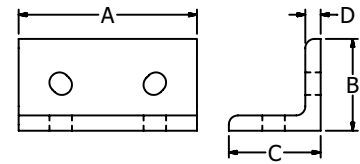
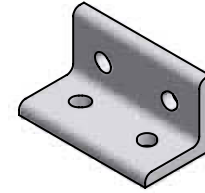
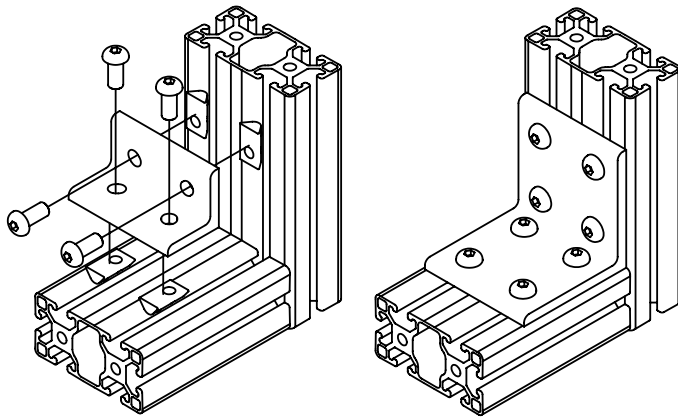
Series	Screws	T-Nuts	Double T-Nut (if applicable)
40	24-118-8	20-058	20-050
30	24-116-8	20-056	—
28	24-110-8	20-055	—
20	24-108-5	20-045	—
1.5"	25-110-5	25-002	25-041
1"	25-106-4	25-031	—

Ordering Information

Series	A	B	C	D	Hole \varnothing	Weight	Part #
40	34	38.1	38.1	6.4	9	38	28-602
	34	76.2	76.2	6.4	9	79	28-606
30/28	25	25.4	25.4	3.2	8.4	9	28-601
	25	57.2	57.2	3.2	8.4	21	28-605
20	15.9	19.1	19.1	3.2	5.5	4	28-600

Series	A	B	C	D	Hole \varnothing	Weight	Part #
1.5"	1.34"	1.50"	1.50"	0.25"	9mm	38	28-602
	1.34"	3.00"	3.00"	0.25"	9mm	79	28-606
1"	0.63"	0.75"	0.75"	0.13"	5.5mm	4	28-600

Angle Brackets



Application

Angle Brackets are used to fasten profiles together without any machining. Although it does not provide as solid a joint as other fastening methods, it allows flexibility for positioning and joining of profiles with no servicing.

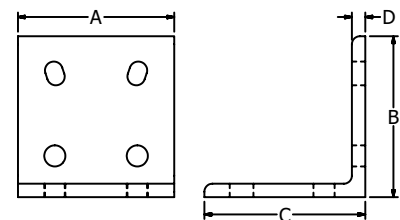
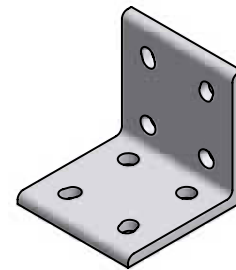
Technical Data

Aluminum, Anodized

20-116
28-603
28-604

Recommended Fasteners (Order Separately)

Series	Screws	T-Nuts	Double T-Nut (if applicable)
40	24-118-8	20-058	20-050
30	24-116-8	20-056	—
28	24-110-8	20-055	—
20	24-108-5	20-045	—
1.5"	25-110-5	25-002	25-041
1"	25-106-4	25-031	—



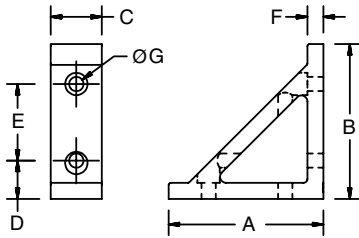
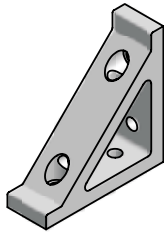
Ordering Information

Series	A	B	C	D	Hole Ø	Weight	Part #
40	74	38.1	38.1	6.4	9	84 g	28-604
	74	76.2	76.2	6.4	9	174 g	28-608
30/28	50.8	25.4	25.4	3.2	8.4	18 g	28-603
	53	57.2	57.2	3.2	8.4	45 g	28-607
20	36	19.1	19.1	3.2	5.5	10 g	20-116

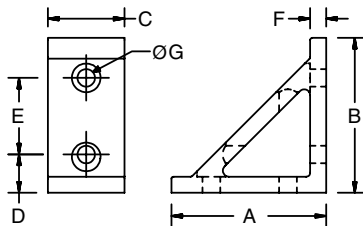
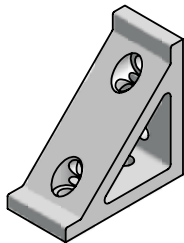
28-607
28-608

Series	A	B	C	D	Hole Ø	Weight	Part #
1.5"	2.91"	1.50"	1.50"	0.25"	9mm	84 g	28-604
	2.91"	3.00"	3.00"	0.25"	9mm	174 g	28-608
1"	2.00"	1.00"	1.00"	0.13"	5.5mm	18 g	28-603

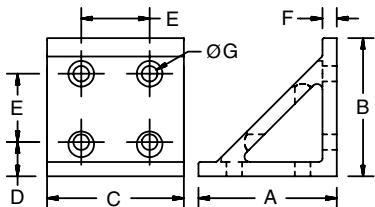
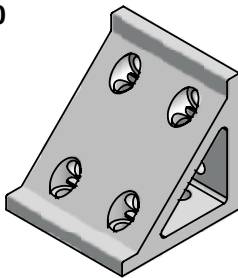
Machined Gussets



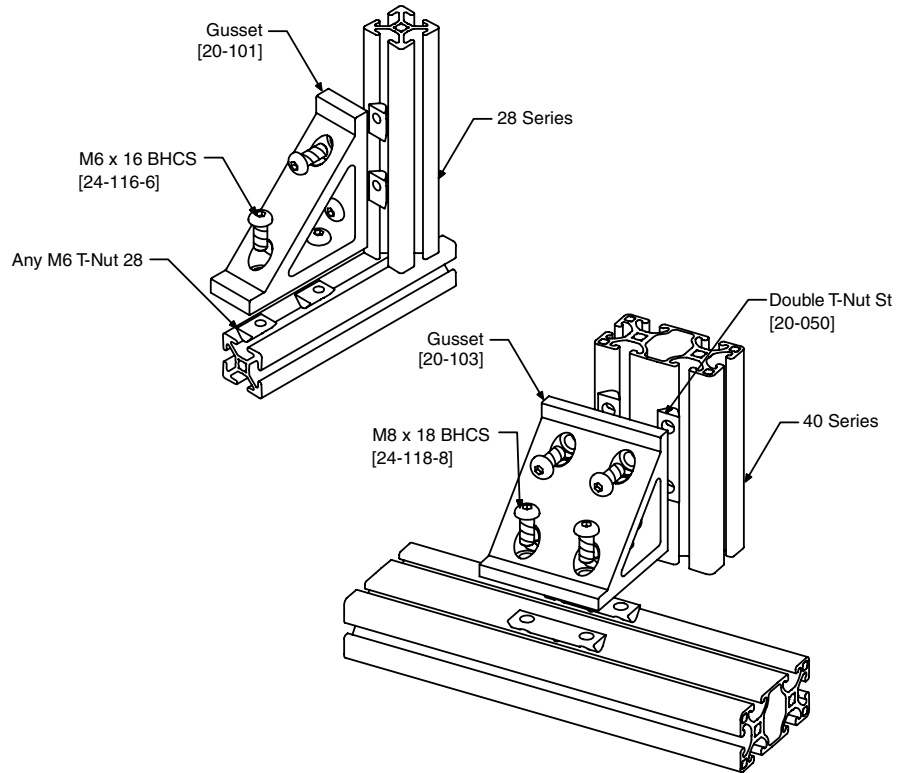
20-101
20-442



20-102
20-440



20-103
20-441



Application

Provide a high strength connection between profiles. Gussets are used to attach profiles at 90° angles without additional fasteners. Can be added to joints with fasteners to increase strength or ensure accurate right angles.

Technical Data

Aluminum, Clear Anodized
Order all hardware separately.

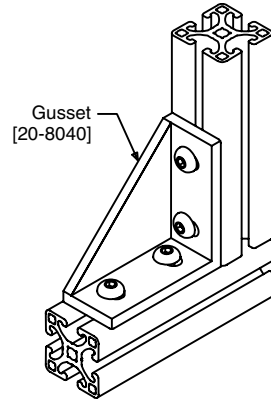
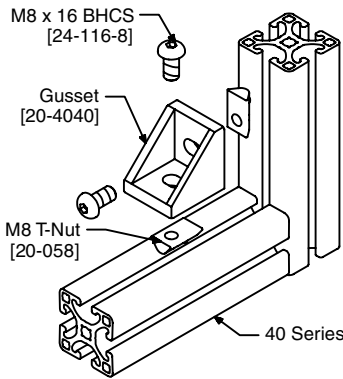
Recommended Fasteners (Order Separately)

Series	Screws	T-Nuts
40	24-118-8	20-058 or 20-050
30	24-116-6	20-056
28	24-116-6	20-055
1.5"	25-112-5	25-002 or 25-041
1"	25-110-4	25-031, 25-034 or 25-036

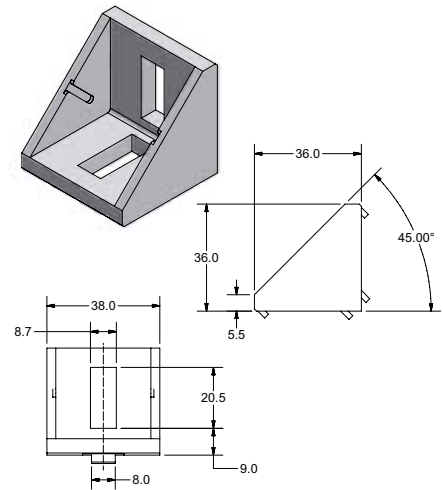
Ordering Information

Series	A	B	C	D	E	F	G	Weight	Part #
40	77	77	34	20	40	8	9	0.14 kg	20-102
	77	77	74	20	40	8	9	0.31 kg	20-103
30/28	77	77	25.4	20	40	8	7	0.11 kg	20-101
1.5"	3.03"	3.03"	1.25"	0.75"	1.50"	0.32"	0.34"	0.14 kg	20-440
	3.03"	3.03"	2.75"	0.75"	1.50"	0.32"	0.34"	0.31 kg	20-441
1"	3.03"	3.03"	0.875"	0.75"	1.50"	0.32"	0.28"	0.11 kg	20-442

* For Machining Tap use part number 19-010 for each profile end



Cast Gussets



20-4040

Application

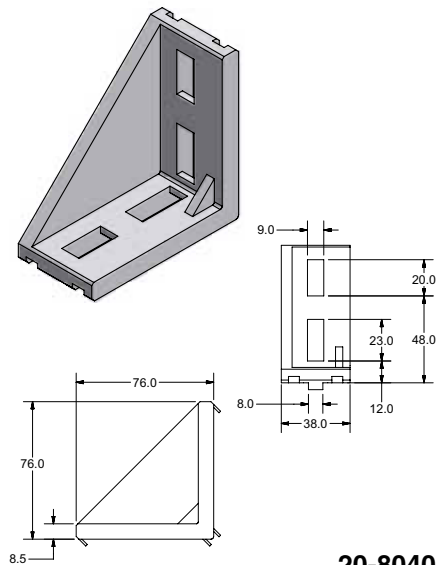
Provide a high strength right angle connection between two profiles. These gussets can only be used for right angle connections in-line with T-slots as shown. Cast tabs help align the gussets in the center of the profile.

Technical Data

Die Cast Aluminum

Recommended Fastening Hardware (Order Separately)

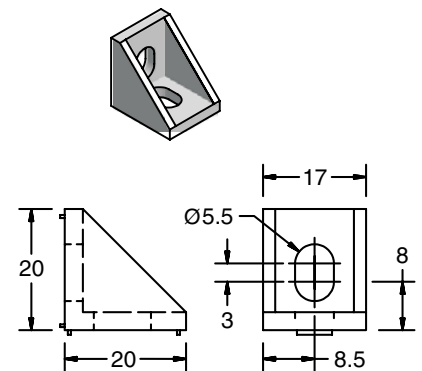
Series	Screws	T-Nuts
40	24-116-8	Any M8
20	25-106-4	25-031, 25-034 or 25-036
1.5"	25-112-5	25-002 or 25-041



20-8040

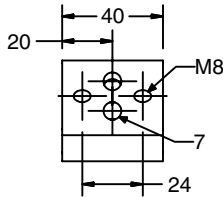
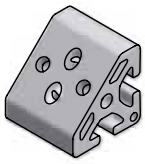
Ordering Information

Description	Unit	Weight	Part #
Gusset 40	Each	59 g	20-4040
Gusset 80x40	Each	136 g	20-8040
Gusset 20	Each	36 g	20-1010

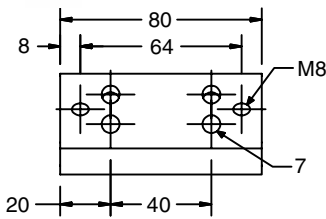
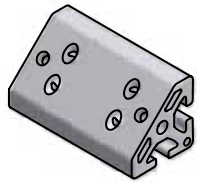


20-1010

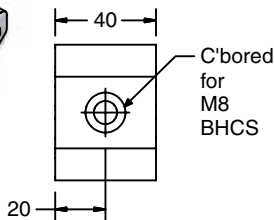
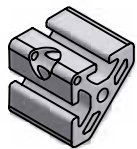
Corner Elements



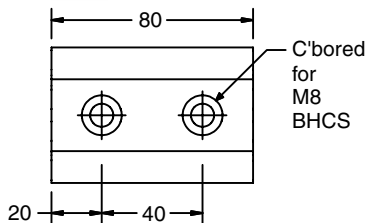
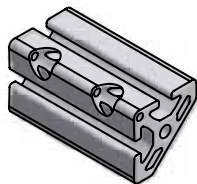
21-035



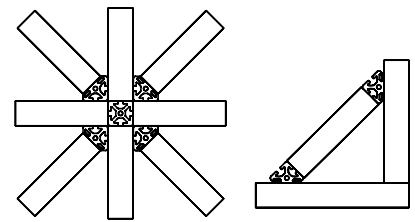
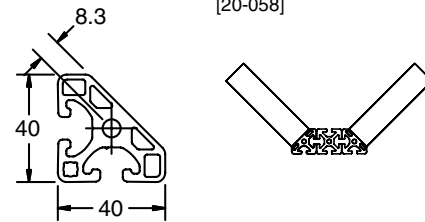
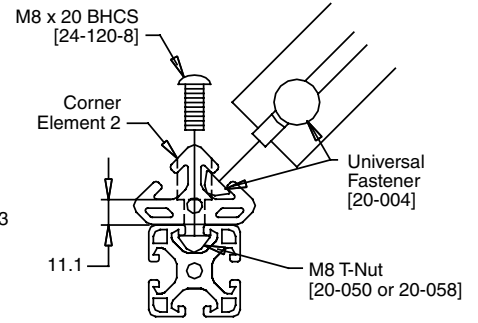
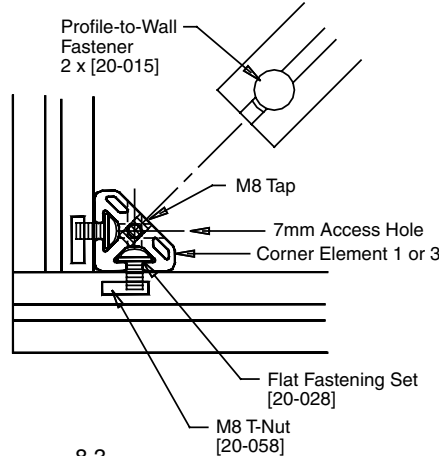
21-036



21-037



21-038



Application

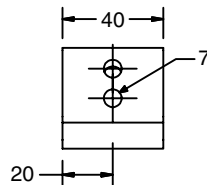
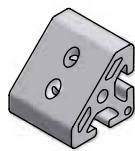
Designed for attaching profiles at 45°. Ideal for trusses, bracing and supports.

Technical Data

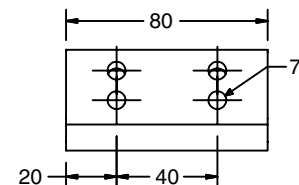
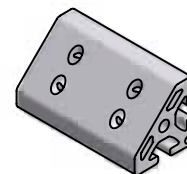
Aluminum, Clear Anodized

Ordering Information

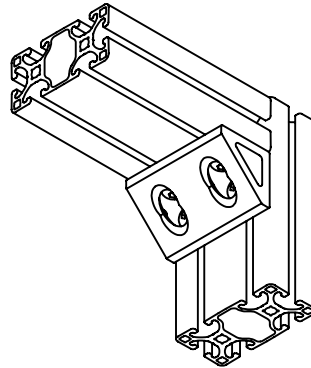
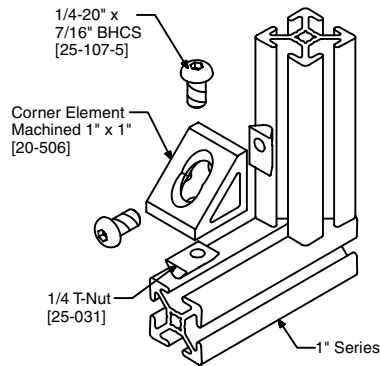
Series	Description	Unit	Weight	Part #
40	Corner Element 1, 40	Each	71 g	21-035
	Corner Element 1, 80	Each	45 g	21-036
	Corner Element 2, 40	Each	67 g	21-037
	Corner Element 2, 80	Each	133 g	21-038
	Corner Element 3, 40	Each	73 g	21-135
	Corner Element 3, 80	Each	150 g	21-136
	End Cap 40 x 40-45°	Each	6 g	18-820



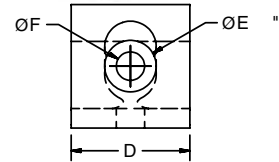
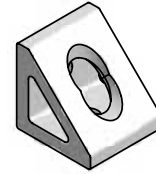
21-135



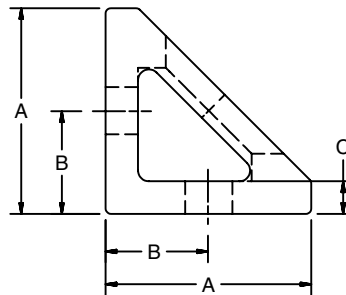
21-136



Machined Corner Elements



20-2828M
20-4040M
20-506
20-508



Application

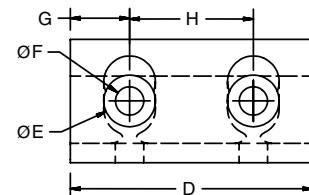
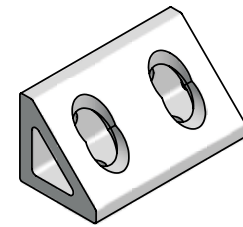
These corner brackets provide a high strength, accurate right angle connection between two profiles, while providing a low profile, aesthetically pleasing look.

Technical Data

Aluminum, Clear Anodized

Recommended Fastening Hardware (Order Separately)

Series	Screws	T-Nuts	Double T-Nuts (if applicable)
40	24-116-8	20-058, 20-081 or 20-181	20-050
28	24-112-6	20-056, 20-090 or 20-190	—
1.5"	25-110-5	25-002, 20-082 or 20-182	25-041 or 25-046
1"	25-107-4	25-031, 25-034 or 25-036	25-032 or 25-037

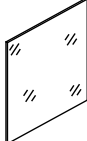



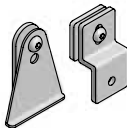


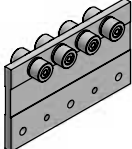
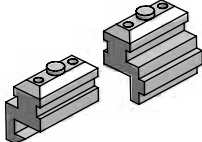



20-2856M
20-4080M
20-507
20-509

Ordering Information

Series	A	B	C	D	E	F	G	H	Wt.	Part #
40	38	20	6	35	15	8.5	—	—	64 g	20-4040M
	38	20	6	75	15	8.5	17.5	40	136 g	20-4080M
28	27	14	5	25	11	7	—	—	23 g	20-2828M
	27	14	5	53	11	7	12.5	28	50 g	20-2856M
1.5"	1.496"	0.75"	0.177"	1.25"	0.63"	0.34"	—	—	64 g	20-508
	1.496"	0.75"	0.177"	2.75"	0.63"	0.34"	0.72"	1.50"	136 g	20-509
1"	1.000"	0.50"	0.236"	0.88"	0.44"	0.28"	—	—	23 g	20-506
	1.000"	0.50"	0.236"	1.88"	0.44"	0.28"	0.47"	1.00"	50 g	20-507

Section 4 Panels & Doors

Panels Wire Mesh	112-114 113		Door Guide System	125	
Panel Mounting Blocks	115-118		Rollers	126	
Mesh Retainers	119-120		Roller Insert 25	127	
Bifold Door Glide	121-122		Rail Carts	128	
Sliding Door Set Sliding Door Guide	123 124		Roller Carts	128	

Panel Selection Guide

Panel Type	Recommended Use					Opacity		Cost		
	Vertical, Non-Structural	Vertical, Structural	Horizontal, Non-Structural	Shelving, No Load	Shelving, Load Supporting	Transparent or See Through	Opaque	Low	Medium	High
Lexan®	✓		✓	✓		✓			✓	
Wire Mesh	✓		✓			✓		✓		
TRESPA®	✓ ¹	✓	✓ ¹	✓ ¹	✓		✓			✓
Expanded PVC	✓		✓				✓	✓		
Aluminum Veneer	✓	✓		✓	✓		✓		✓	

¹ Can be used, but not an economical solution.

Panel Materials

Lexan® High-impact resistant polycarbonate panels provide clarity, safety, security and energy savings. Meets every industry standard for general purpose window glazing. Clear or light grey smoked.

Wire Mesh Wire mesh provides a high level of security and can be used for safety guarding and enclosures. PVC coating provides a smooth, snag-free surface that is extremely rust and corrosion resistant.

TRESPA® TRESPA® is a solid grade decorative building panel, suitable for horizontal surfaces and vertical panels. Resistant to scratches, corrosives and solvents. Can be drilled and tapped.

Expanded PVC Light duty colored panel material, primarily for use vertically. Can also be used as light duty shelving material. Not recommended for temperature over 90°C (194°F).

Aluminum Veneer These panels have a very high strength to weight ratio. The panels have clear anodized aluminum skins on each side with a high density hardboard core. These panels can be used in both horizontal and vertical applications.

Special Items Special panel materials including color selection of stock material are available. IPS capabilities include custom machining of steel and aluminum panels for use in fixtures, machine bases and assemblies. Contact your local representative or an IPS Application Engineer to review special requirements.

Special item availability includes:

- Machined Steel and Aluminum Surfaces
- Welding Curtains
- Decorative Panels
- Glass and Clear Plastic Composites
- Perforated Metal Decking
- Sound Insulating Panels
- Wood and Laminate Panels

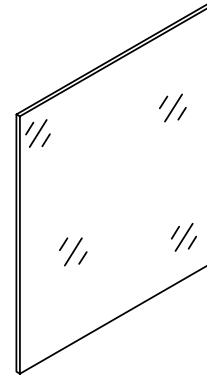
Application

High-impact resistant polycarbonate panels provide clarity, safety, security and energy savings. Meets every industry standard for general purpose window glazing.

Technical Data

Lexan®, clear or light smoked
UL Listed
Maximum Size:
1219.2 x 2438.4mm (4' x 8')

Lexan® Panels



Ordering Information*

Description	Unit	Weight	Part #
3mm Lexan® – Clear	m ²	3.60 kg/m ²	26-790-3P
6mm Lexan® – Clear	m ²	7.62 kg/m ²	26-790-6P
6mm Lexan® – Light Smoked	m ²	7.62 kg/m ²	26-795-6P

* Call for other shades and thicknesses.
* For cut-to-size panels, delete the "P" from the end of the part # and specify panel dimensions. A minimum charge of 1/8 of the standard panel size will apply.

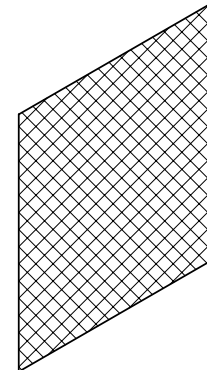
Application

Wire mesh provides a high level of security and can be used for safety guarding and enclosures. Provides a smooth, snag-free surface that is extremely rust and corrosion resistant.

Technical Data

Flat welded steel wire with fuse-bonded PVC coating.
Maximum Size:
1219.2 x 2438.4mm (4' x 8')

Wire Mesh



Ordering Information*

Description	Wire Gage	Unit	Weight	Part #
1/2" x 1/2" Black	16	m ²	2.89 kg/m ²	26-210-05P
1" x 1" Black	12	m ²	4.17 kg/m ²	26-210-10P
1" x 1" Yellow	12	m ²	4.17 kg/m ²	26-250-10P
1½" x 1½" Black	12	m ²	2.98 kg/m ²	26-210-15P
2" x 2" Black	12	m ²	1.92 kg/m ²	26-210-20P

* For cut-to-size panels, delete the "P" from the end of the part # and specify panel dimensions. A minimum charge of 1/8 of the standard panel size will apply.

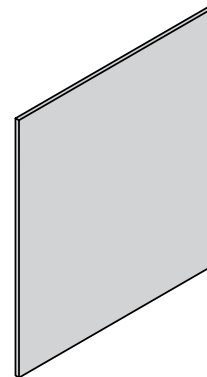
Application

TRESPA® is a solid grade decorative building panel, suitable for horizontal surfaces and vertical panels. Resistant to scratches, corrosives and solvents. Can be cut, drilled and milled. Suitable for doors, shelves and enclosures.

Technical Data

Thermosetting resins, homogeneously reinforced with cellulose fibers.
Non-toxic, asbestos free, has good fire retarding characteristics. Finished on both sides.
Maximum Size:
1828.8 x 2438.4mm (6' x 8')

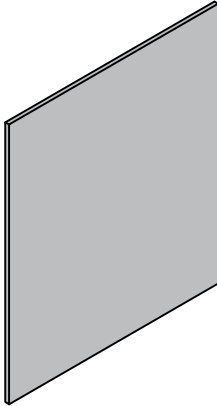
TRESPA® Panels



Thickness	Unit	Weight (kg/m ²)	Part #*			
			Black	Grey	Blue	White
6mm	m ²	8.57	26-410-6P	26-420-6P	26-430-6P	26-480-6P
8mm	m ²	11.4	26-410-8P	–	–	–
10mm	m ²	14.3	–	–	26-430-10P	–

* For cut-to-size panels, delete the "P" from the end of the part # and specify panel dimensions. A minimum charge of 1/8 of the standard panel size will apply.

Expanded PVC



Application

Light duty colored panel material, primarily for use vertically. Can also be used as light duty shelving material.

Technical Data

Rigid expanded foam polyvinyl chloride (PVC)

UL Recognized

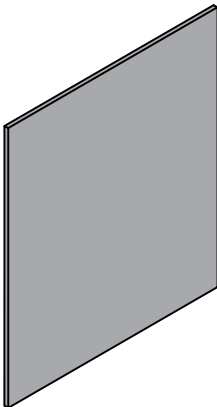
Maximum Size:
1219.2 x 2438.4 mm (4' x 8')

Ordering Information*

Description	Unit	Weight	Part #
6mm Expanded PVC – Black	m ²	4.19 kg/m ²	26-510-6P
6mm Expanded PVC – Blue	m ²	4.19 kg/m ²	26-530-6P
6mm Expanded PVC - White	m ²	4.19 kg/m ²	26-580-6P

* For cut-to-size panels, delete the "P" from the end of the part # and specify panel dimensions. A minimum charge of 1/8 of the standard panel size will apply.

Aluminum Veneer



Application

These panels have a very high strength to weight ratio. The panels have clear anodized aluminum skins on each side with a high density hardboard core. These panels can be used in both horizontal and vertical applications.

Technical Data

Veneer - Anodized Aluminum

Core - High Density Hardboard**

Maximum Size:
1219.2 x 2438.4 mm (4' x 8')

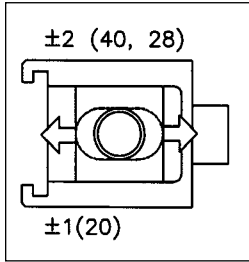
Ordering Information*

Description	Unit	Weight	Part #
6mm Aluminum Veneer - Black**	m ²	5.32 kg/m ²	26-110-6P
6mm Aluminum Veneer - Clear	m ²	5.32 kg/m ²	26-170-6P
6mm Aluminum veneer - White**	m ²	5.32 kg/m ²	26-180-6P

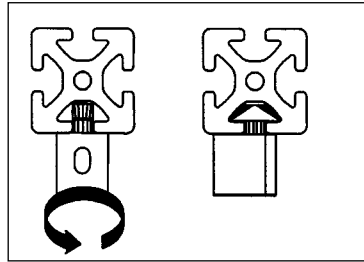
* For cut-to-size panels, delete the "P" from the end of the part # and specify panel dimensions. A minimum charge of 1/8 of the standard panel size will apply.

** PVC core

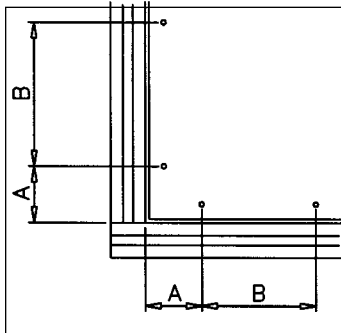
Multiblock PA and Uniblock PA



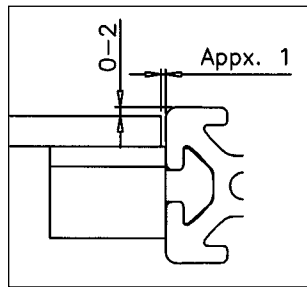
1



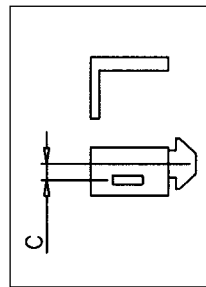
2



3



4



5

- 1 Floating square nut secured within the multiblock by flat spring provides for alignment flexibility
- 2 Insertion of Multiblock PA in the T-slot
- 3-4 Recommended gaps for assembling Multiblocks PA
- 5 Distance between Multiblock center and floating nut

Application

Versatile block for mounting panels and screens. The block locks into the T-slot at a 90° position with an offset design to suit various panel thicknesses. Movable captive nut provides larger alignment range for locating through holes in panels.

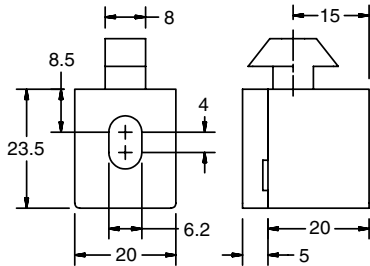
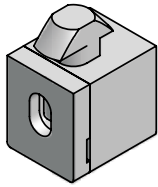
Technical Data

Glass Filled Nylon, Black
 Square Steel Nut, M6 or M4

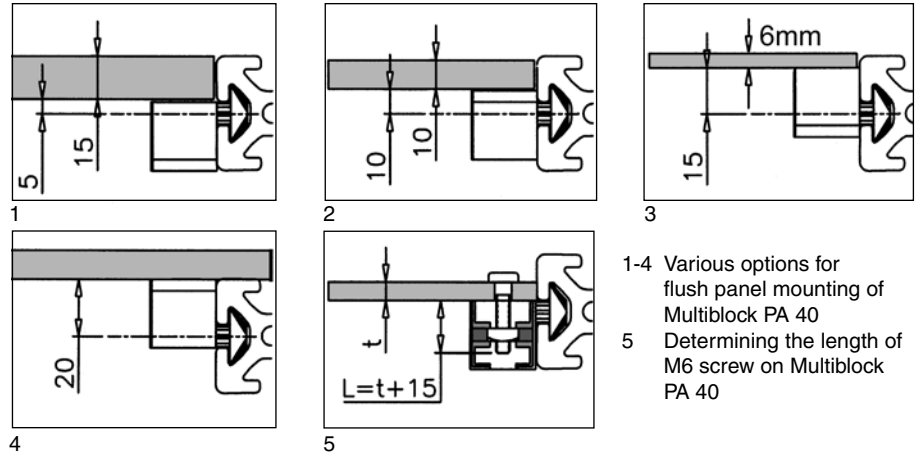
Spacing Table

Profile Series	Max Load N (lbs)	Dimensions		
		A	B	C
40	250 (56)	80	400-600	5
30, 28	210 (47)	70	400-500	2.8
20	100 (22)	60	300-400	2
1.5"	250 (56)	5.0"	20" - 40"	0.20"
1"	100 (22)	2.5"	10" - 15"	0.08"

Multiblock PA 40



22-100

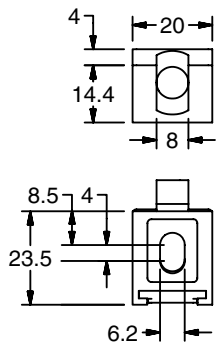
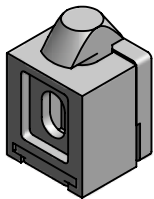


- 1-4 Various options for flush panel mounting of Multiblock PA 40
- 5 Determining the length of M6 screw on Multiblock PA 40

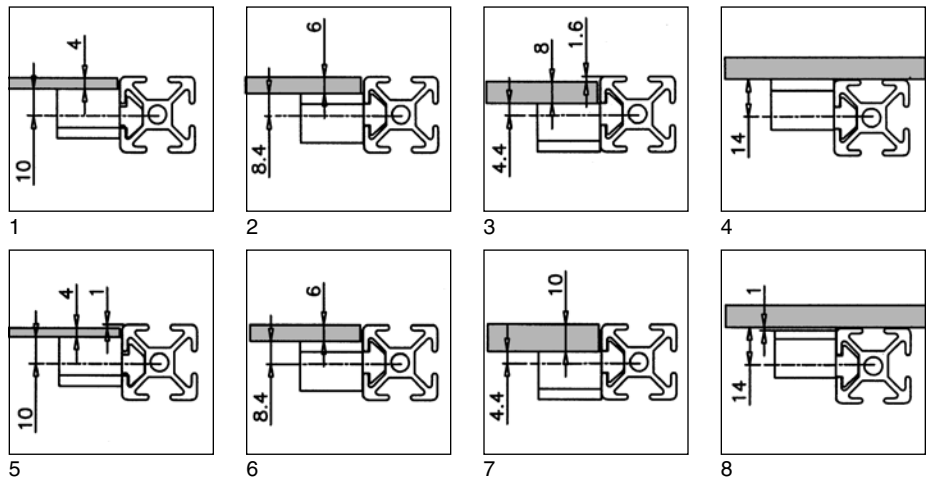
Ordering Information

Series	Description	Unit	Weight	Part #
40	Multiblock PA 40 with M6 Nut	Each	13 g	22-100
40/1.5"	Multiblock PA 40 with 1/4-20 Nut	Each	13 g	22-115

Multiblock PA 30/28



22-103

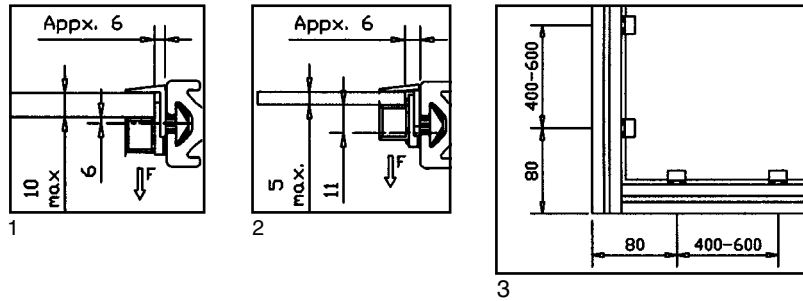


- 1-4 Mounting options for Multiblock PA 30/28 on 28 series profiles
- 5-8 Mounting options for Multiblock PA 30/28 on 30 series profiles

Ordering Information

Series	Description	Unit	Weight	Part #
28/30	Multiblock PA 30/28 with M6 Nut	Each	10 g	22-103

Clamp Multiblock



- 1 Mounting position for panels up to 10mm thick to clamp Multiblock 40.
- 2 Mounting position for panels up to 5mm thick Multiblock rotated 180°
- 3 Edge distance between panel element and profile

Application

Mounting element for attaching panels to 40, 30 and 28 Series profiles without using additional fasteners or machining the panel. Insert multiblock into T-Slot at any location and lock in position by turning 90° clockwise. Slide locking clip to secure the panel. To remove panel, loosen locking clip with a flat screwdriver.

Technical Data

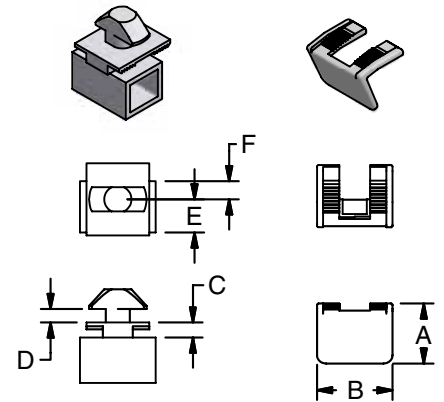
Glass Filled Nylon (Black)

For 22-112: Max load in direction F per drawings above is 250N (56lbs); in opposite direction: 50N (11lbs)

Max Panel Thicknesses

22-112: 10mm (3/8")

22-113: 8mm (5/16")

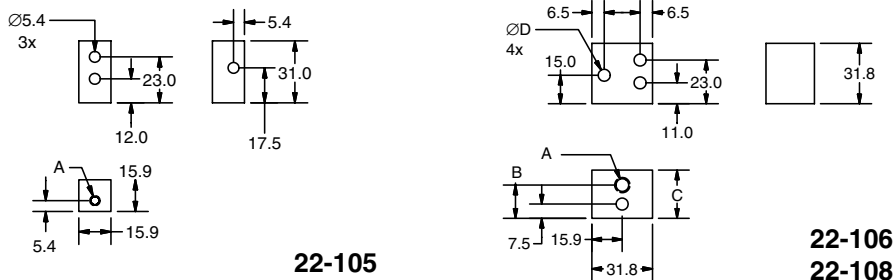


22-112

22-113

Ordering Information

Series	Dimensions (mm)						Weight (g)	Part #
	A	B	C	D	E	F		
40/1.5"	20	25	5	5	11	6	10	22-112
30/28	20	22	5	2	7	—	7	22-113



22-105

22-106
 22-108

Multiblock AI

Application

Mounting element for panels and accessories. Various mounting dimensions are obtained by rotating the block.

Order hardware separately.

Technical Data

Al, clear anodized

Max. load at 90° angle to T-slot:

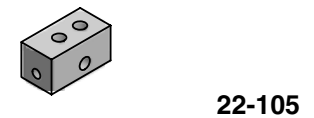
22-105: 500 N (112 lbs)

22-106: 750 N (169 lbs)

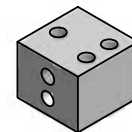
22-108: 1000 N (225 lbs)

Ordering Information

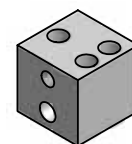
Series	Dimensions (mm)				Weight	Part #
	A	B	C	∅D		
40, 30, 28	M5	—	—	—	18 g	22-105
	M6	17.5	25.4	6.3	58 g	22-106
	M8	22.5	30	8.3	60 g	22-108



22-105

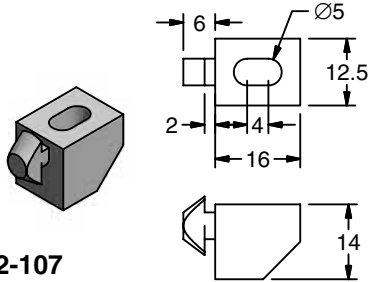


22-106

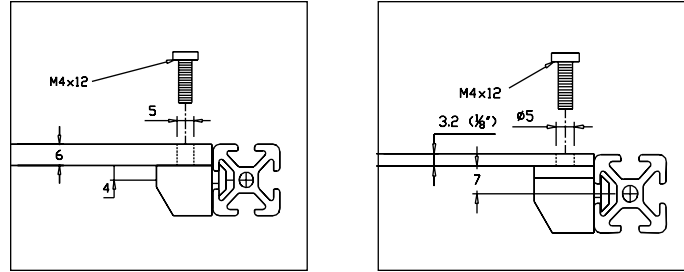


22-108

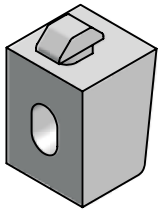
Uniblock PA 20



22-107

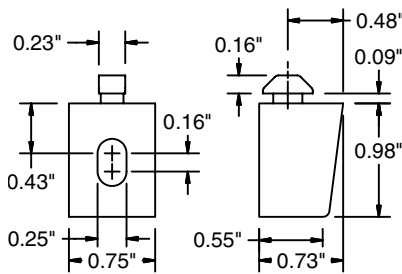


Mounting options for Uniblock PA 20



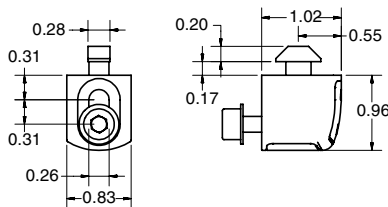
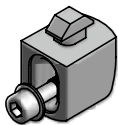
Ordering Information

Profile Series	Description	Unit	Weight	Part #
20	Uniblock PA 20 with M4 Nut	Each	3 g	22-107
	Multiblock PA 20 with M4 Nut	Each	3 g	22-104
1"	Multiblock PA 1", 1/4-20	Each	3g	22-116



22-116

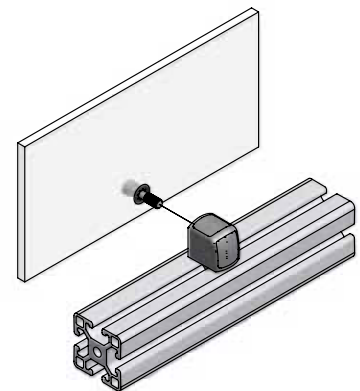
Uniblock 25 CS



22-117

Application

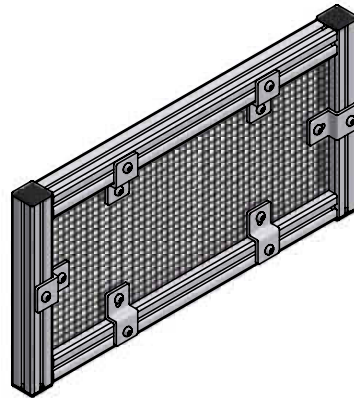
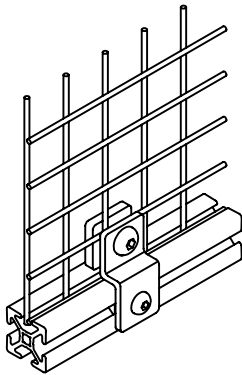
The Uniblock 25 CS includes a captive screw to prevent the loss of hardware when working behind a removable panel. The block locks at a 90° position with an offset for 6-8mm panel thicknesses on 40 and 1.5" Series extrusions.



Ordering Information

Description	Unit	Weight	Part #
Uniblock 25 CS	Each	39 g	22-117

Deluxe

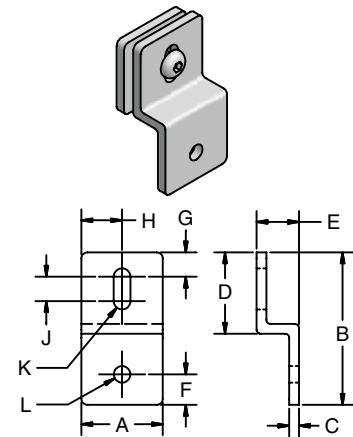


Application

Deluxe retainers are used to securely fasten wire mesh within the T-slot of profiles. This accessory requires screws and T-nuts to mount to profile; order these items separately.

Technical Data

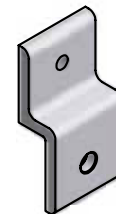
Aluminum
 5/16-18 BHCS included to secure back plate to retainer.



**20-200
 20-202**

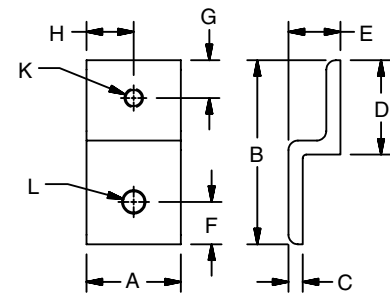
Recommended Fastening Hardware (Order Separately)

Series	Screws	T-Nuts
40	24-116-8	20-058
20	24-108-5	20-045
1.5"	25-110-5	25-002, 20-082 or 20-182



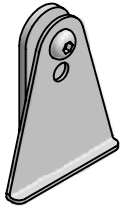
Ordering Information

Style	A	B	C	D	E	F	G	H	J	K	L	Wt.	Part #
Mesh	40	75	4.8	39	20.8	15	12	20	12	8.1	9	80 g	20-202
	20	39	2	20	9	9	4	10	6	5.5	5.5	14 g	20-200
Panel	40	75	4.8	39	20.8	15	15	20	—	M8	9	60 g	20-202P
	20	39	2	20	9	9	7	10	—	M6	5.5	10 g	20-200P

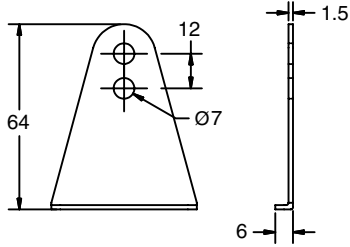


**20-200P
 20-202P**

Economy



Back Plate included but not shown on dimension drawings.



22-110
22-111

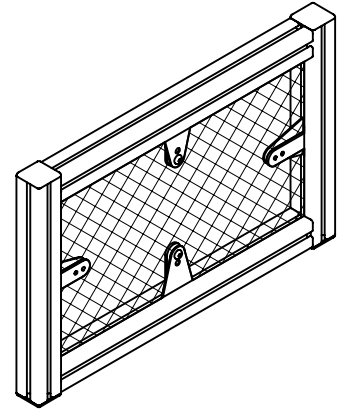
Application

Economical solution for securely fastening wire mesh to 40 and 1.5" Series profiles.

Technical Data

Steel, Zinc Plated

BHCS included to secure back plate to retainer.



Ordering Information

Unit

- Economy Wire Mesh Retainer – M6
- Economy Wire Mesh Retainer – 1/4-20

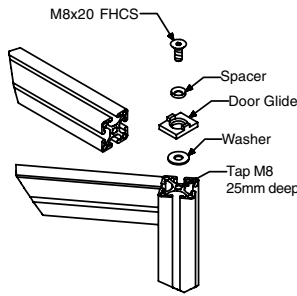
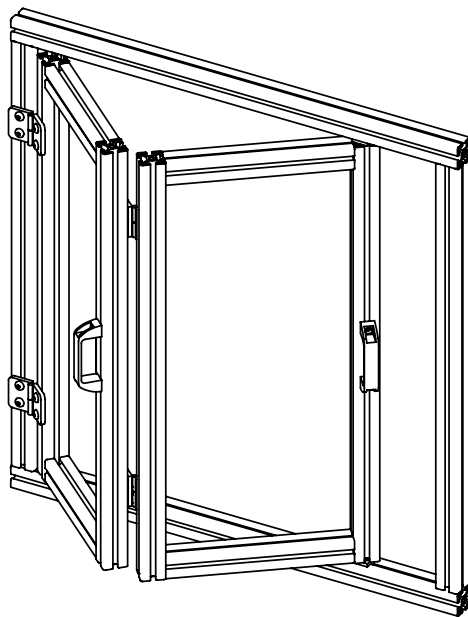
Weight

- Each
- Each

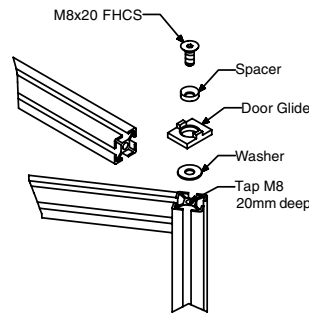
Part

- 59 g 22-110
- 59 g 22-111

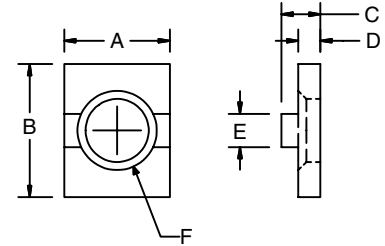
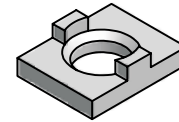
Bifold Door Glides



40 Series



30/28 Series



- 21-080**
- 21-081**
- 25-080**
- 25-082**

Application

Bifold doors are used in very confined areas. Door glides allow rotational and sliding motion at the top and bottom of a vertical member within a permitted bifold door frame. Two glides (one top and one bottom) are required per door.

Technical Data

Door Glide – UHMW
 Spacer – Steel, Zinc Plated
 Washer – Steel, Zinc Plated
 Note: Hardware and tap are SAE Standard

Use the following chart to help select the correct part for your application.

Frame Series	Door Series	Glide Part #
40 & 80 Series	40 Series	21-081
28 Series	28 Series	21-080
1.5"	1.5"	25-080
1"	1"	25-082

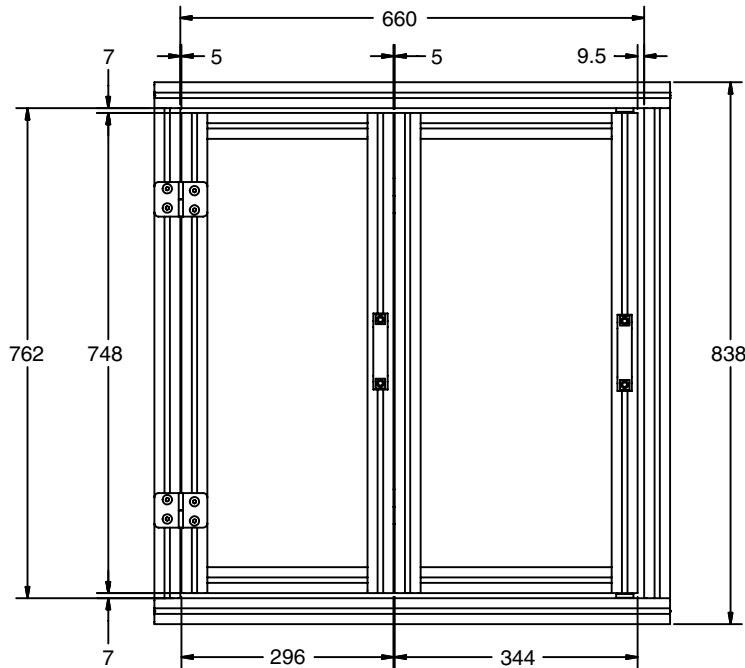
Ordering Information

Ships complete with 2 glides, 2 screws, 2 spacers and 2 washers.

Part #	Dimensions (mm or inch)					
	A	B	C	D	E	F
21-081	36.6	32	9.4	5.3	8	Ø15.2 thru c'sink Ø19 x 90°
21-080	25.4	32	9.4	5.3	8	Ø11.1 thru c'sink Ø14 x 90°
25-080	1.44"	1.26"	0.370"	0.210"	0.315"	Ø0.598" thru c'sink Ø0.750 x 90°
25-082	1.00"	1.00"	0.370"	0.210"	0.250"	Ø0.438" thru c'sink Ø0.563 x 82°

Bifold Door Glides

Design Example for 40 Series Bifold Door



Design Examples

Examples consider the hinges to be medium duty plastic hinges (page 137). Other hinges can be used and dimensions would only be slightly affected.

To determine the width of the narrow door, subtract the sum of the door gaps and 48mm from the frame's inside width dimension, then divide by 2.

Example:

$$660 - (5 + 5 + 9.5 + 48)$$

$$660 - 67.5 = 592.5$$

$$\frac{592.5}{2} = 296$$

To determine the width of the wide door, add 48mm to the width of the narrow door.

Example:

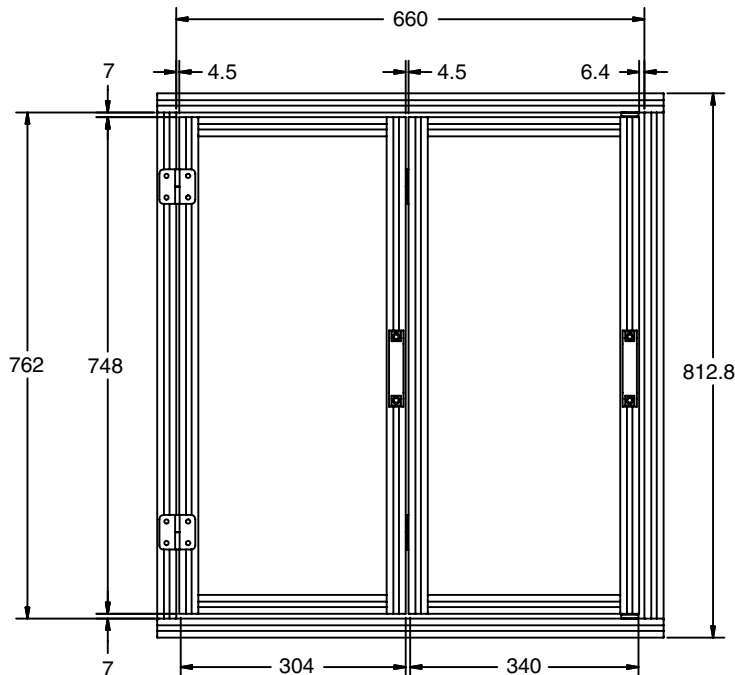
$$296 + 48 = 344$$

To determine vertical door dimension, subtract clearance required for guides and washers (14mm) from the vertical opening dimension.

Example:

$$762 - 14 = 748$$

Design Example for 28 Series Bifold Door



To determine the width of the narrow door, subtract the sum of the door gaps and 36mm from the frame's inside width dimension, then divide by 2.

Example:

$$660 - (4.5 + 4.5 + 6.4 + 36)$$

$$660 - 52 = 608$$

$$\frac{608}{2} = 304$$

To determine the width of the wide door, add 36mm to the width of the narrow door.

Example:

$$304 + 36 = 340$$

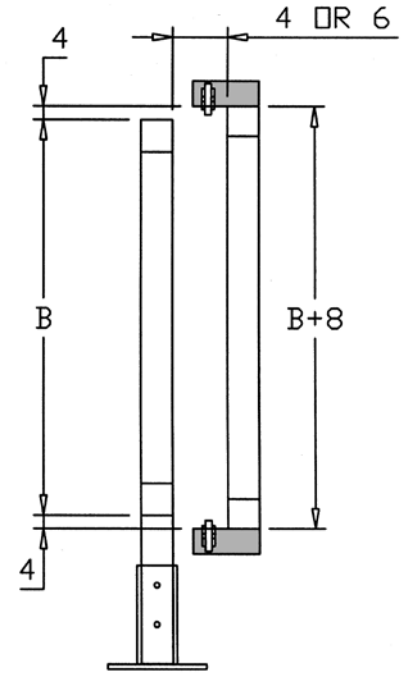
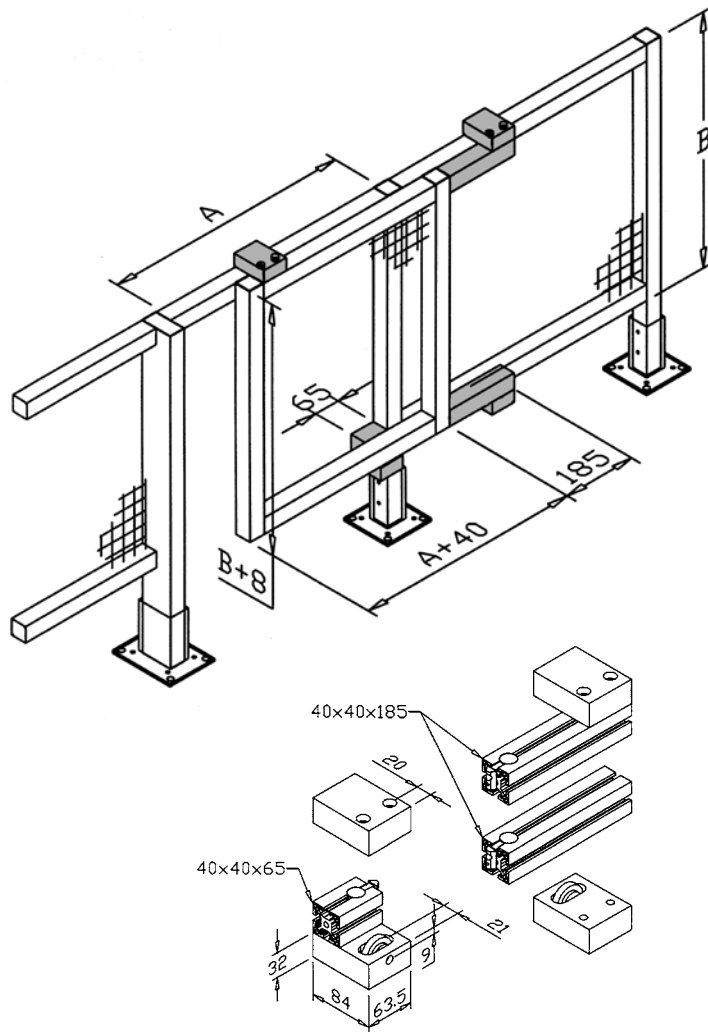
To determine vertical door dimension, subtract clearance required for guides and washers (14mm) from the vertical opening dimension.

Example:

$$762 - 14 = 748$$

*** When using 28 Series for the doors and 40 Series for the frame, use the design example for 28 Series.**

Sliding Door Set



23-065

Application

Packaged system for creating a sliding door with 40 and 1.5" Series profiles. The set consists of the necessary supports, rollers and roller housing to mount the movable sliding panel to an assembly.

Hardware will vary based on design and must be ordered separately.

Technical Data

Supports: Aluminum, Clear Anodized, Fully machined for assembly

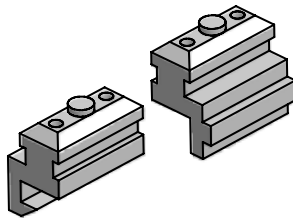
Rollers: Roller PA 40 (21-069)

Roller Holders: 10-040

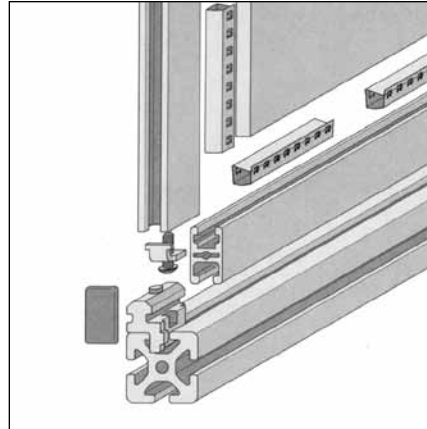
Ordering Information

Description	Unit	Weight	Part #
Sliding-Door Set	Set	36 g	23-065

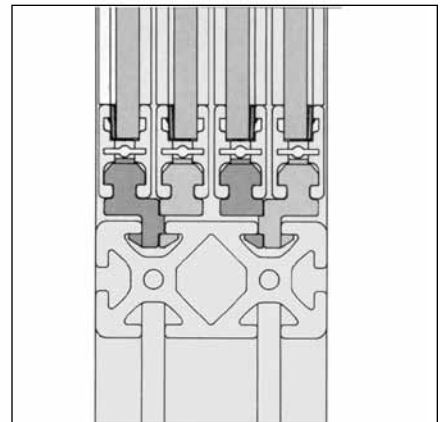
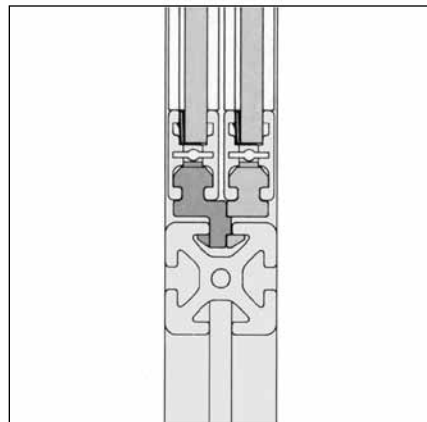
Sliding Door Guide



23-054

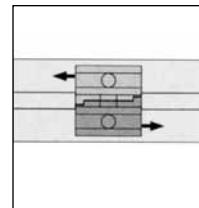
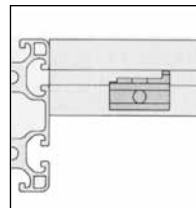
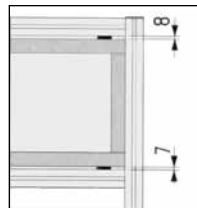


See page 46 for application details



1

2



3

4

5

- 1 Two sliding doors in T-slot of a 40 series profile
- 2 Four sliding doors in T-slots of an 80x40 profile

- 3 Mounting dimensions within a frame
- 4 Slide piece positioning in the T-slot
- 5 Guide pieces function as stops when two doors slide in the same T-slot

Application

Allows a door constructed of 32x18 Bi-Slot profile to slide in the T-Slot of a 40 Series profile. This guide attaches to the door frame through a 7mm mounting hole. Two Guides with opposite offsets are available, allowing 2 panels to be mounted in a single T-Slot.

Technical Data

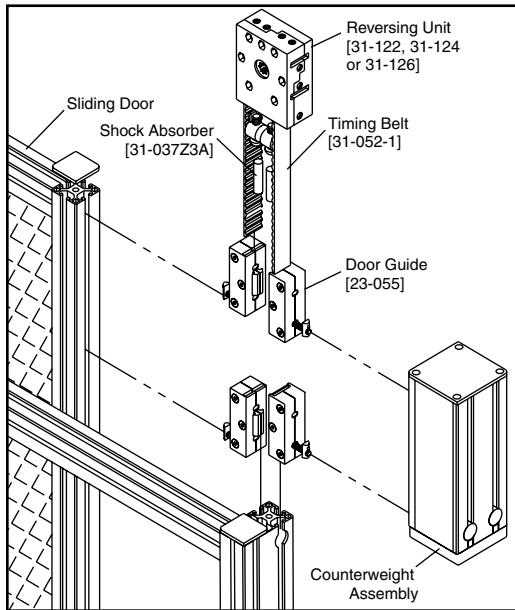
Polyoxymethylene, Black
Spring/Spring Bolt are Steel
Set includes four guides – two of each offset.
Door Sizing – size door 15mm smaller than frame opening. Door gap will be 7mm at bottom and 8mm at top.

Ordering Information

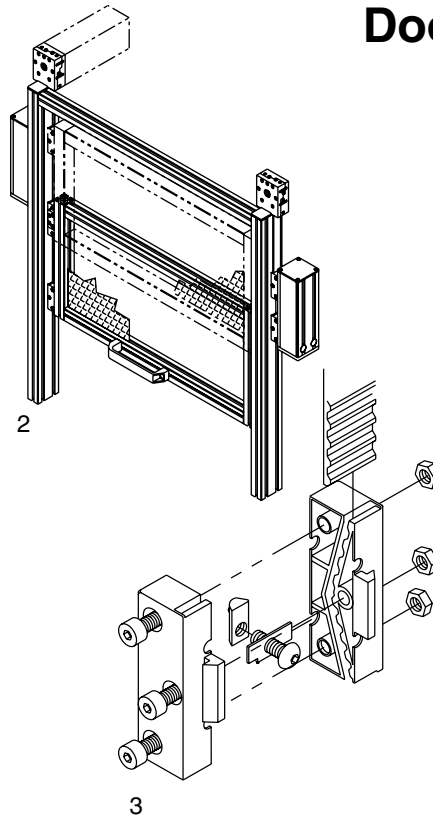
Description
Sliding-Door Guides for 32x18 Bi-Slot

Unit	Weight	Part #
Set	36 g	23-054

Door Guide System



- 1 Assembly of the Door Guide System
- 2 Sliding Door with two counterweights
- 3 Assembly of the Door Guide
- 4-5 Counterweight Assemblies 80x80 and 160x80



Application

Door guides are used to build doors that operate between two vertical 40 series profiles. The weight of the door may be counter-balanced by one or two counterweights that are connected to the door space with door guides, timing belt 25T10 and reversing unit 40.

The size of the counterweight is determined by the weight of the door. The operation of the door may be motorized by attachment of a suitable drive to one of the reversing units.

Door Guides

Four guides are usually attached to the door, and slide in the inside slots of the vertical 40 series profiles. Two guides are attached to each of the counterweights, and slide in the outer slots of the vertical frame profiles.

Ordering Information

Description	Unit	Weight	Part #
Door Guide	1 set	0.12 kg	23-055
Closure Plate 80x80	1 set	0.48 kg	21-155
Closure Plate 160x80	1 set	0.96 kg	21-156

Counterweights

Duct wall support and wall profiles are used to build the counterweight. A closure plate attached with four M6 Profile-to-Wall Fasteners forms the bottom of the counterweight. Heavy metal scrap may be used as filler material. Suitable conduit cap is used to close the top of the counterweight.

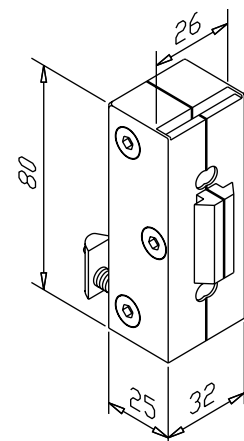
Closure Plate

St, black epoxy finish
Complete with fastening set

Technical Data

Door Guide: Polyoxymethylen, black

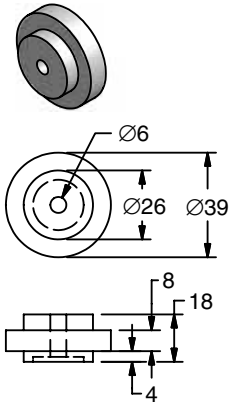
Complete with the following:
Steel plate insert, M6x25 BHCS,
M6 T-slot nut St, three M6x25 SHCS,
and three M6 hex nuts



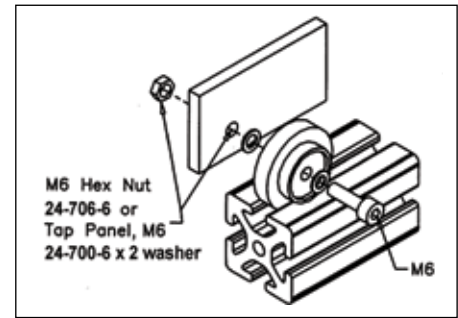
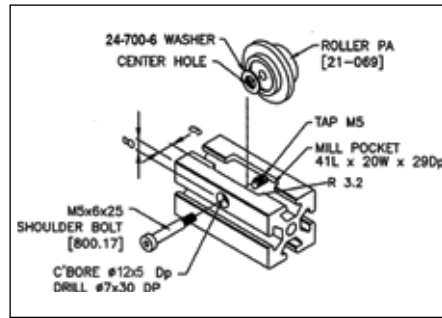
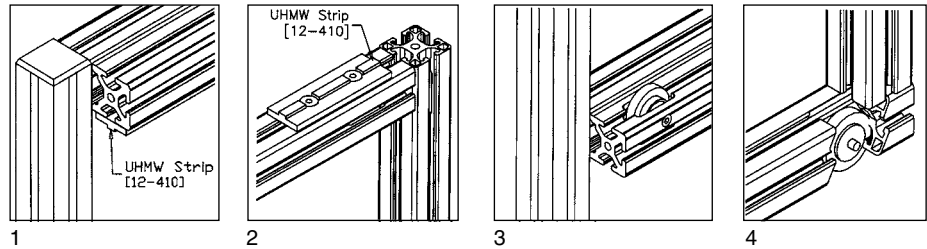
23-055



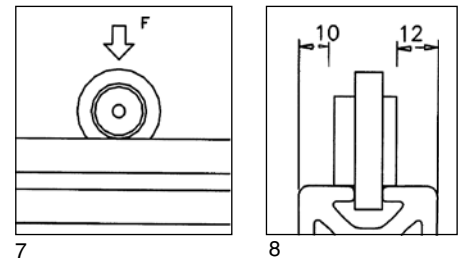
Roller 40



21-069



- 1-4 Application and details for sliding door with Roller PA 40
- 5 Servicing for Roller PA mounted in 40x40 Heavy profile
- 6 Mounting the Roller PA 40 for a sliding panel application
- 7 Max. load $F = 150\text{ N}$
- 8 Dimensions of offset on 40 series profile



Application

Versatile ball bearing roller which can be mounted in the T-slot. Roller has asymmetric design for various clearance dimensions such as on sliding doors and panels.

Technical Data

Glass-filled nylon, black complete with two deep groove ball bearings with dust covers.

Max. load 150 N (34 lbs)

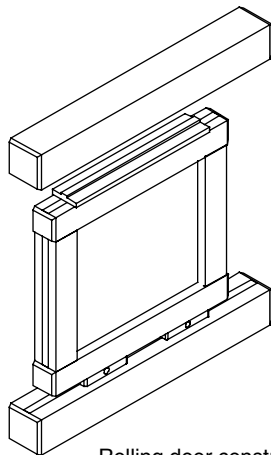
Leave 5mm offset between profiles.

Hardware ordered separately.

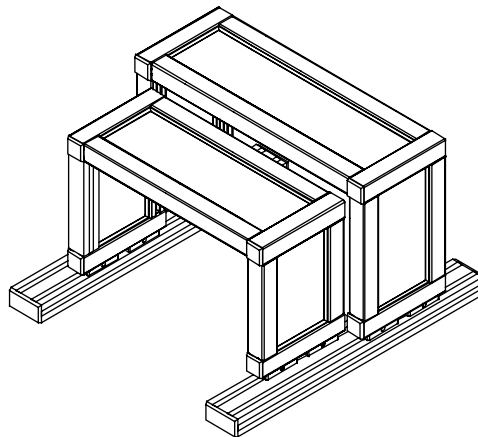
Ordering Information

Description	Unit	Weight	Part #
Roller PA 40	1 pc	32 g	21-069
Shoulder Bolt M5x6x25	1 pc		800.17

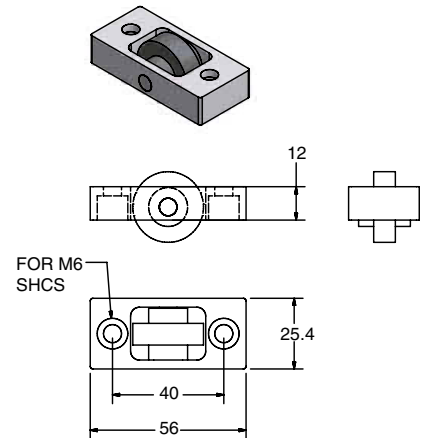
Roller Insert 25



Rolling door constructed with 28 series profiles guided on top with UHMW strip 12-410



Two bypassing covers constructed with 28 series profiles rolling on a pair 30x60 profiles.



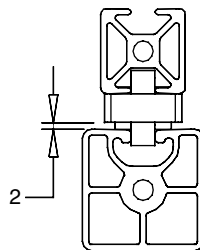
21-065

Application

Versatile roller mounted in a housing. Step roller is available without housing for sliding panel applications.

Technical Data

Roller: Delrin, Black
 Housing: Aluminum, Clear Anodized
 Pin: Stainless, Steel
 Hardware not included



Clearance dimensions

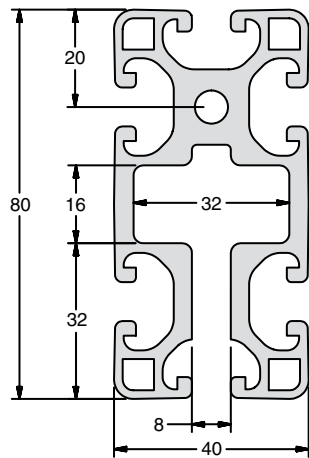
Recommended Hardware

Series	Screws (Order 2)	T-Nut (Order 2)
40	24-314-6	20-190
30	24-312-6	20-190
20	24-310-6	20-190
1.5"	25-108-4	20-193

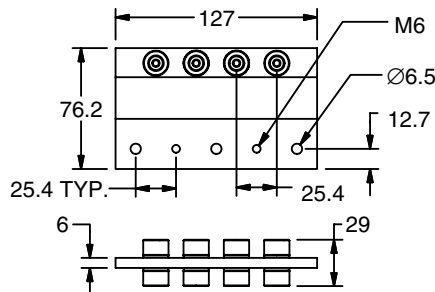
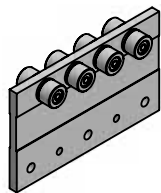
Ordering Information

Description	Unit	Weight	Part #
Roller Insert 25	Each	32 g	21-065

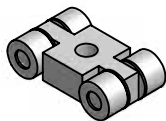
Rail Carts



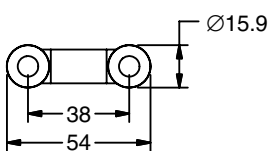
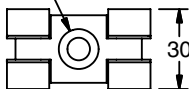
14-248



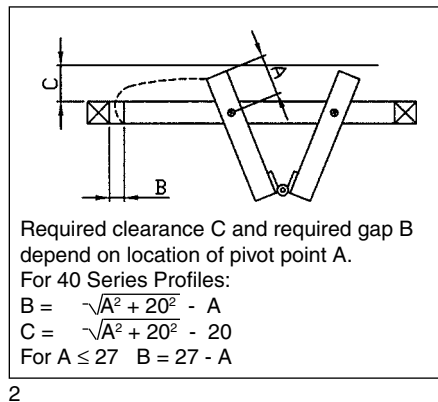
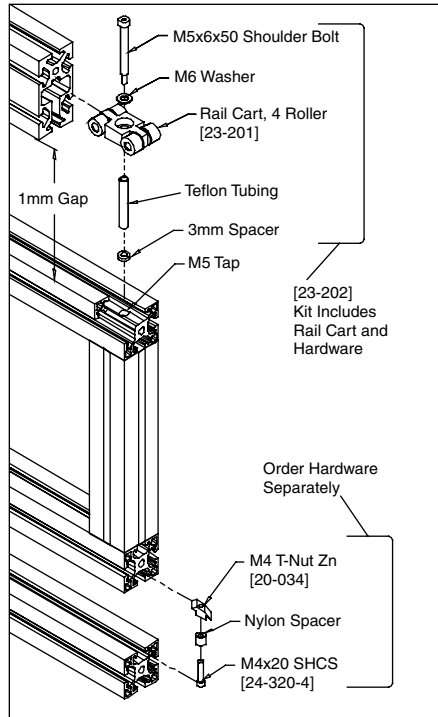
23-200



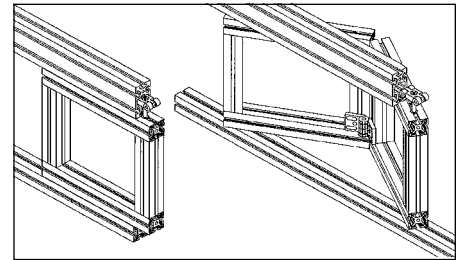
FOR M8 SHCS



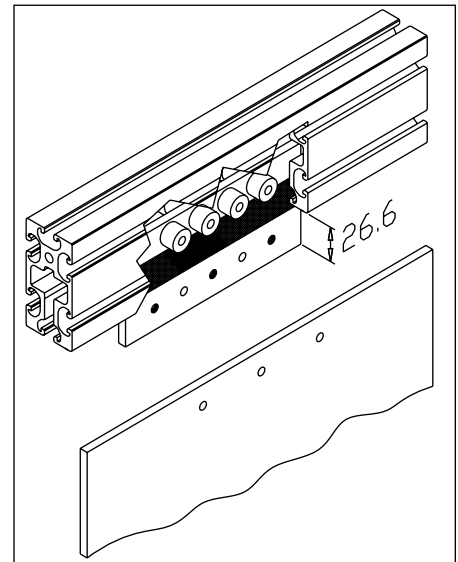
23-202



2



3



4

- 1 Assembling the 4-Roller Rail Cart to a door frame. Apply Loctite™ to M6 screw to prevent loosening. Guide along lower section for sliding door using nylon spacer (8mm long, O.D. 8mm)
- 2 Calculations for Bi-fold sliding doors
- 3 Sliding Door and Bi-fold sliding door assemblies
- 4 8-Roller Rail Cart assembly in 80x40 Rail profile

Application

Designed for use in 80x40 Rail Profile part #14-248 (See Linear Section). Rail carts used for hanging and sliding doors and other hanging components such as moving material on workstations.

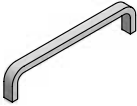
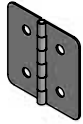
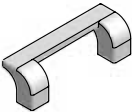
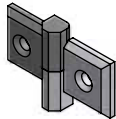
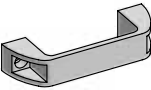
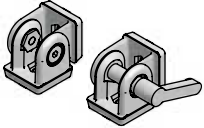


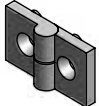
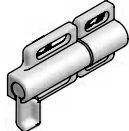
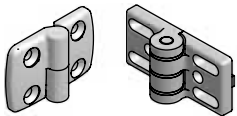


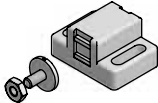

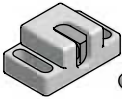

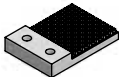
Ordering Information

Description	Unit	Weight	Max LoadN (lbs)	Part #
8-Roller Cart	Set	0.20 kg	440 (100)	23-200
4-Roller Cart	Each	45 g	220 (50)	23-201
4-Roller Cart with Fastening Set	Set	64 g	220 (50)	23-202

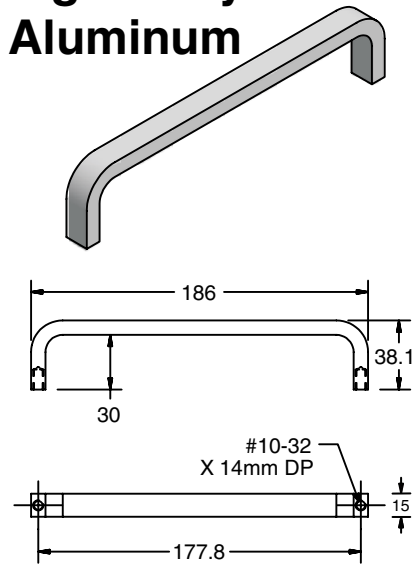
Profile	Unit	Weight	Part #
Profile 80x40 Rail Transport	Cut off 6m max.	4.19 kg/m	14-248
	*saw cut needed for cut to length		19-002



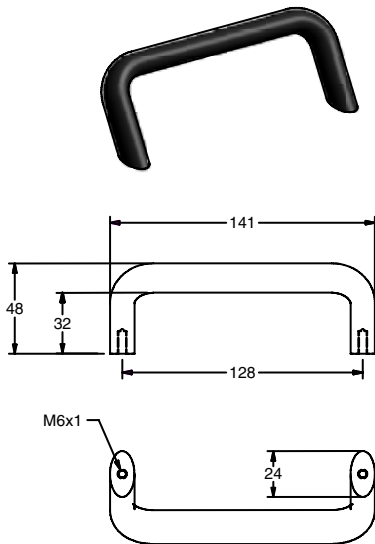
Section 5 Handles & Hinges

Light Duty Metal Handles	130		Butt Hinges	144	
Light Duty Plastic Handles	131		Lift-Off Hinges	144	
Plastic Handles	132		Pivot Joints	145	
Tube Handles	133		Quarter Turn Latches	146-147	
			Inside Handle	147	
			Latch Accessories	148	
Light Duty Hinges	134-136		Dead Bolt	149	
Medium Duty Lift-Off Hinges	137-138		Slam Latch	149	
Medium Duty Metal Hinges	139-140				
Adjustable Hinges	141		Magnetic Catches	150	
Positioning Hinges	142		Ball Catch	151	
Concealed Hinges	142		Ball Plunger	152	
			3-Way Ball Catch	152	
Multi-Series Hinges	143		Door Stops	153	

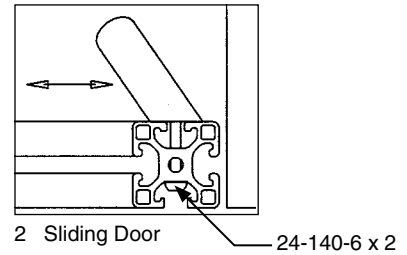
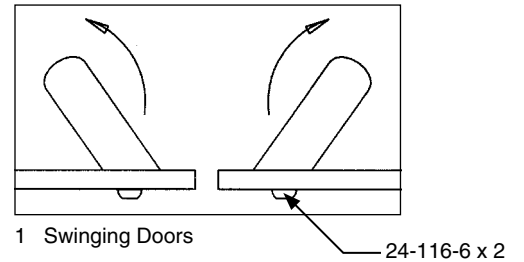
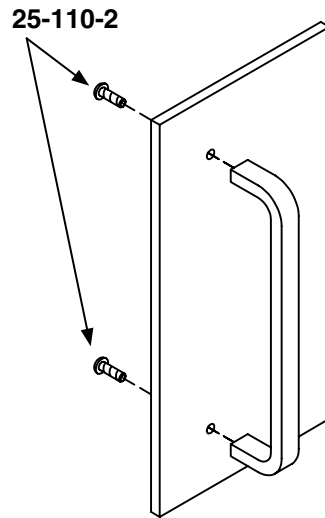
Light Duty Aluminum



23-030



23-034



Application

Handle for light duty doors

Technical Data

23-030: Aluminum, Clear Anodized
23-034: Aluminum, Black Powdercoat

Recommended Fastening Hardware (Order Separately)

Part #	Screws	Application
23-030	(2) 25-110-2	Panel Mount
23-034	(2) 24-116-6	Panel Mount (picture #1)
	(2) 24-140-6	Profile Mount (picture #2)

Ordering Information

Description	Unit	Weight	Part #
Light Duty Aluminum Handle	Each	85 g	23-030
Light Duty Aluminum Angled Handle	Each	11 g	23-034

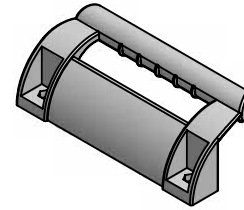
Light Duty Plastic

Application

Handle for double doors to keep operators hands from hitting when opening.

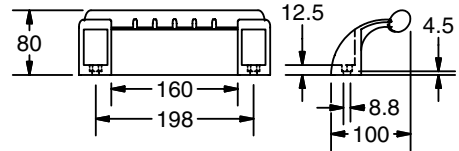
Technical Data

Glass-Fiber Reinforced Plastic
 Black Matte Finish



Recommended Fastening Hardware (Order Separately)

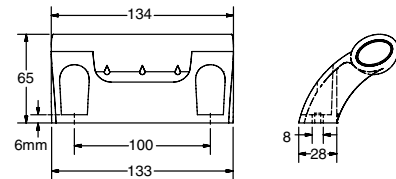
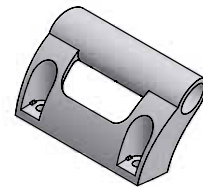
Series	Screws	T-Nuts
40/1.5"	(2) 24-316-8	(2) 20-058
30	(2) 24-312-8	(2) 20-058
28	(2) 24-312-8	(2) 20-057



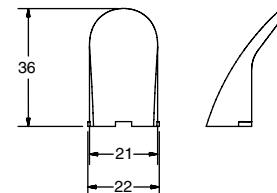
23-074

Ordering Information

Description	Unit	Weight	Part #
Large Angled Handle	Each	356 g	23-074
Open Angled Handle	Each	114g	23-075
Caps for 23-075	Each	3g	23-076

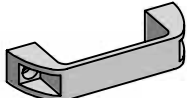


23-075

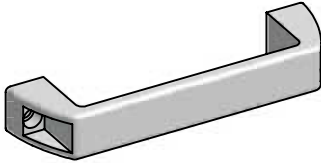


23-076

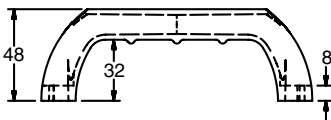
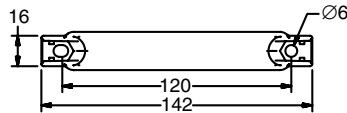
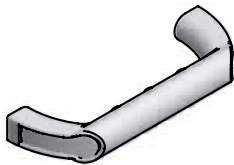
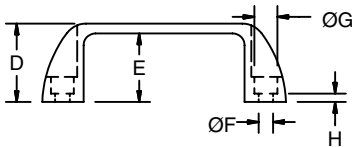
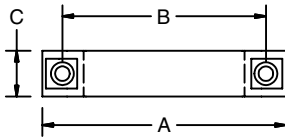
Plastic Handles



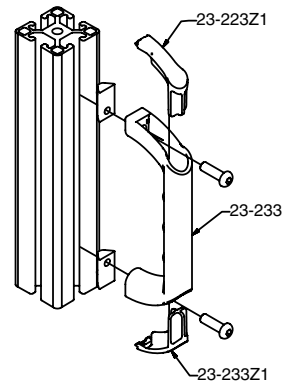
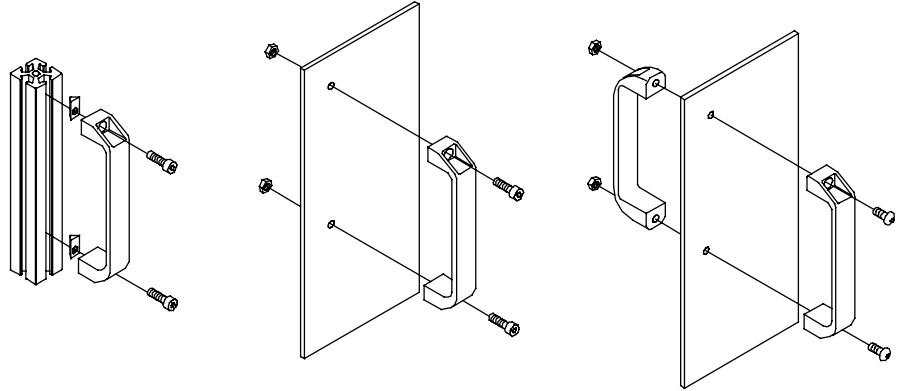
23-033



23-028



23-233



Application

Multipurpose handle for mounting onto panels or profiles. Hardware length is determined by applications.

Technical Data

Glass Filled Nylon, Black

Order Hardware Separately.

Use M6 for 23-033 and 23-028

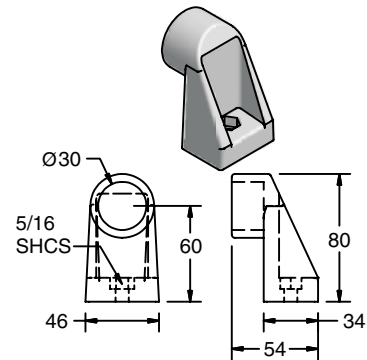
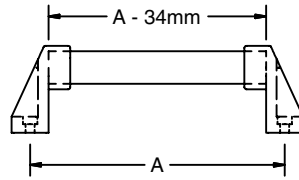
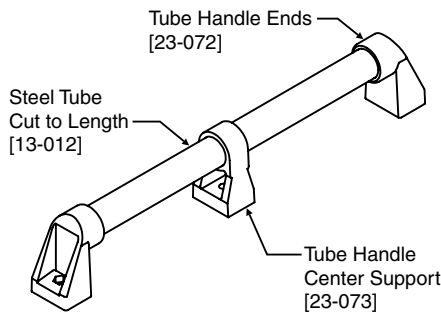
Recommended Fastening Hardware (Order Separately)

Part #	Series	Screws	T-Nuts
23-033	40	(2) 24-318-6	(2) 20-056
	30	(2) 24-316-6	(2) 20-056
	28	(2) 24-316-6	(2) 20-055
	1.5"	(2) 25-311-4	(2) 25-001 or 20-083
	1"	(2) 25-308-4	(2) 25-031 or 25-034
23-028	40/30	(2) 24-318-6	(2) 20-056
	28	(2) 24-316-6	(2) 20-055
23-233	20	(2) 24-114-5	(2) 20-054

Ordering Information

Dimensions								Weight	Part #
A	B	C	D	E	F	G	H		
112	93.5	21	36	30	6.5	10.5	6	33 g	23-033
170	152	28	52	45	6.5	10.5	8.5	70 g	23-028
See Drawing								26.2 g	23-233
Caps for 23-233 (2 per)								4 g	23-233z1

Tube Handles



Application

Handle allows variable lengths. Order tube cut to length for a custom fit solution.

Technical Data

Polyamide, Black
 Tube: Coated Steel
 Order Hardware Separately

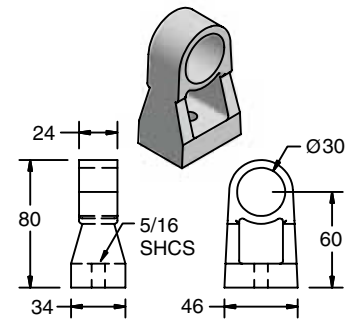
23-072

Recommended Fastening Hardware (Order Separately)

Part #	Screws	T-Nuts
23-072	25-312-5	20-082
23-073	25-316-5	20-082

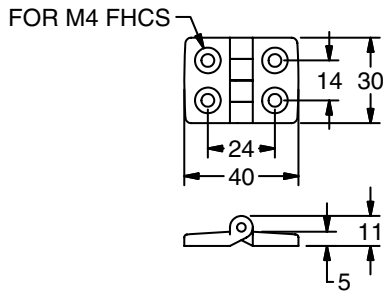
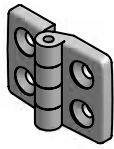
Ordering Information

Description	Unit	Weight	Part #
Tube Handle Ends	Each	12.7 g	23-072
Center Support for handles over 36"	Each	7.6 g	23-073
Coated Steel Tube	Cut off max. 2m	1.52 kg/m	13-012
* Saw cut needed for Cut to Length			19-007

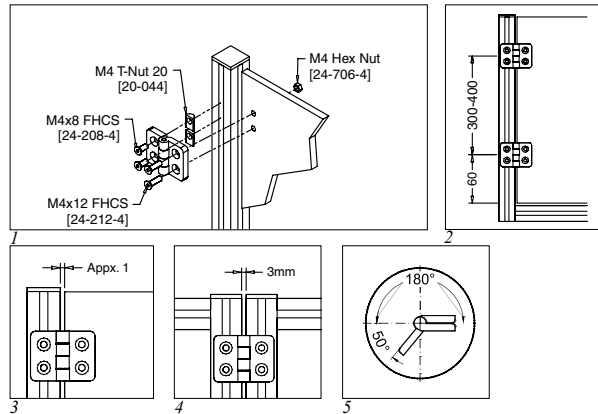


23-073

Light Duty PA 20



23-020



- 1 Assembly of Hinge PA 20 on panel
- 2 Hinge positions
- 3-4 Clearance dimensions
- 5 Range of swing

Application

For light doors and lids constructed of 20 Series profiles

Technical Data

Glass-filled Nylon, Black
Max Load: 40Nm (30 ft-lbs)

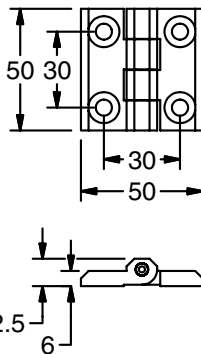
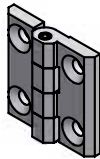
Recommended Fastening Hardware (Order Separately)

Screws	T-Nuts
24-208-4 (1 per hole)	24-044 (1 per hole)

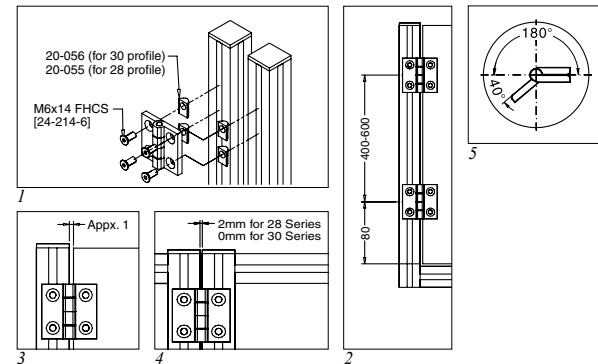
Ordering Information

Description	Unit	Weight	Part #
Hinge PA 20 Series	Each	7 g	23-020

Medium Hinge 30/28



23-242



- 1 Assembly of Medium Hinge 30/28 on profiles
- 2 Hinge positions
- 3-4 Clearance dimensions
- 5 Range of swing

Application

Suitable for medium loads such as machine and guard doors. Can be used with 30 or 28 Series profiles.

Technical Data

Zinc Cast, Black Powdercoat
Pin is Stainless Steel
Max. Load: 400Nm (295 ft-lbs)

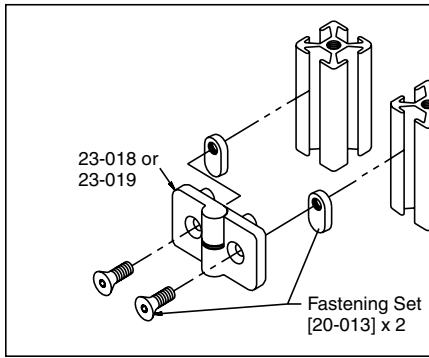
Recommended Fasteners (Order Separately)

Series	Screws	T-Nut
30	24-214-6	20-056
28	24-214-6	20-055

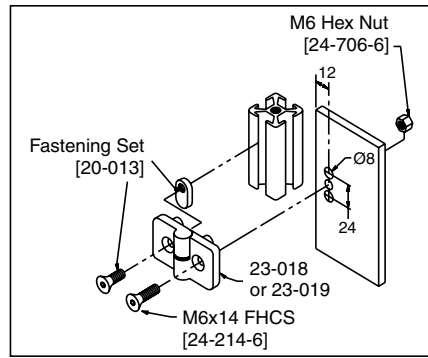
Ordering Information

Description	Unit	Weight	Part #
Medium Hinge 30/28	Each	86 g	23-242

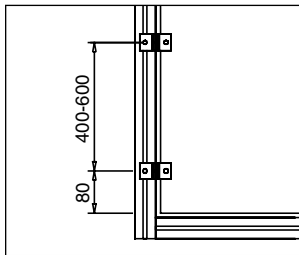
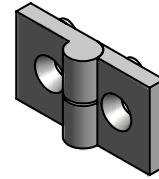
Light Duty PA 28



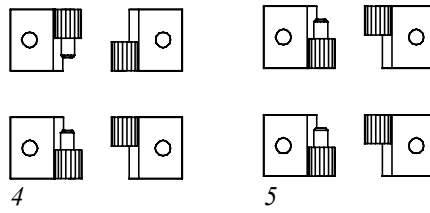
1



2

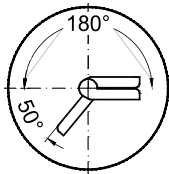
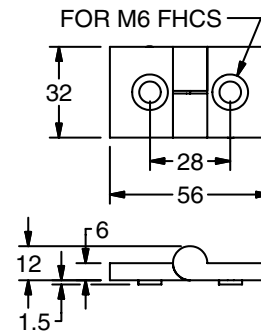


3



4

5



- 1-2 Attaching Light Duty Hinges 28 to 28 Series profiles and panels
- 3 Placement of hinges on panels
- 4 Non lift-off doors require one right hand and one left hand Hinge
- 5 Lift-off doors require either right or left hand Hinges

23-018 & 23-019

Application

For light doors and lids constructed of 28 Series profiles or light panel material.

Technical Data

Glass-filled Nylon, Black
Max Load: 100Nm (22 ft-lbs)

Recommended Fastening Hardware

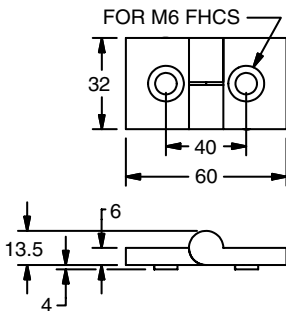
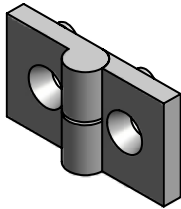
Screws	T-Nut	Hex Nut
24-214-6	20-090	24-706-6

Ordering Information

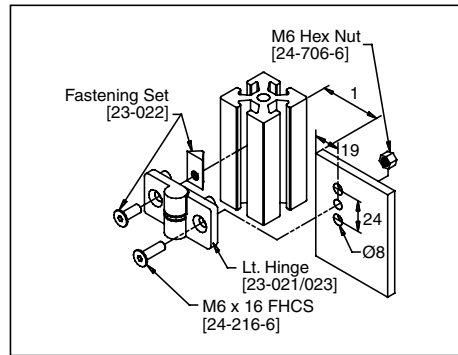
Description	Unit	Weight	Part #
Light Duty Hinge 28, Right	Each	17 g	23-018
Light Duty Hinge 28, Left	Each	17 g	23-019



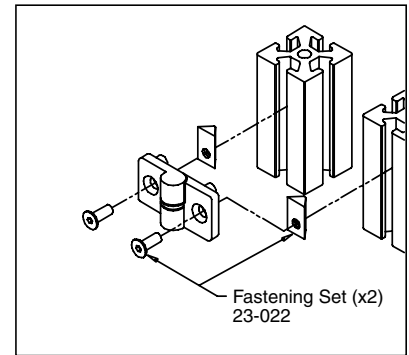
Light Duty 40



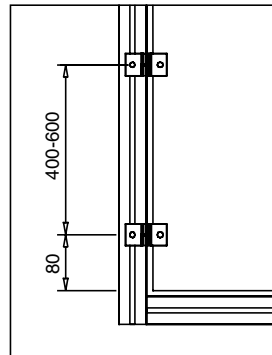
23-021 & 23-023



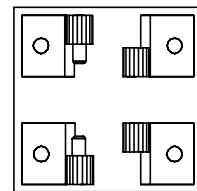
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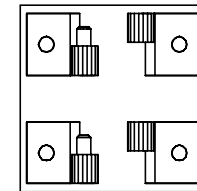
2



3

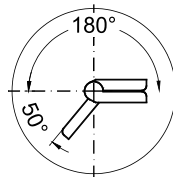


4



5

- 1,2 Attaching Light Duty Hinges 40 to 40 Series profiles and panels
- 3 Placement of hinges on panels
- 4 Non lift-off doors require one right hand and one left hand Hinge
- 5 Lift-off doors require either right or left hand Hinges



Application

For light doors and lids constructed of 40 Series profiles or light panel material

Technical Data

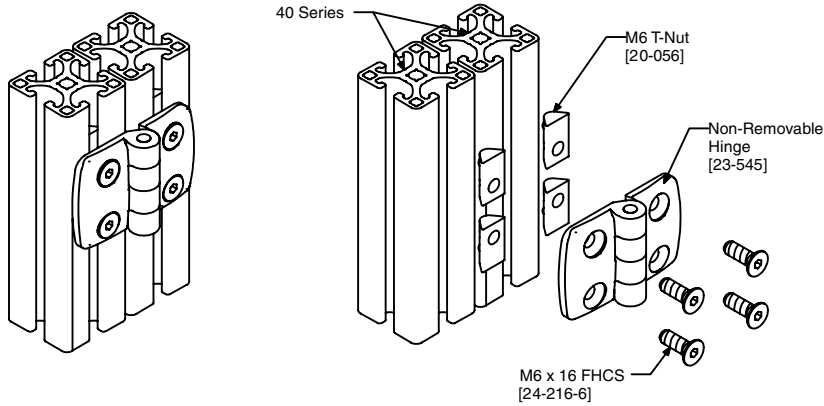
Glass-filled Nylon, Black
Max Load: 100Nm (22 ft-lbs)

Recommended Hardware

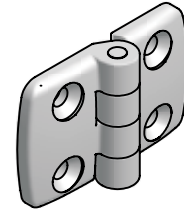
Series	Screw	T-Nut	Hex Nut
40	24-216-6	20-080	24-706-6

Ordering Information

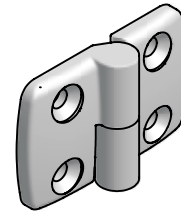
Description	Unit	Weight	Part #
Light Duty Hinge 40, Right	Each	21 g	23-021
Light Duty Hinge 40, Left	Each	21 g	23-023



Medium Duty Plastic (Metric)



NON-REMOVABLE



LIFT OFF

Application

High quality plastic hinges for constructing medium duty guard/ enclosure doors. Hinges are offered in two types: lift off (for left and right hand doors) and non-removable.

Technical Data

Glass-filled Nylon, Black
Stainless Steel Pin
Max Torque: 100Nm (74 ft-lbs)

Ordering Information

Dimensions (mm)

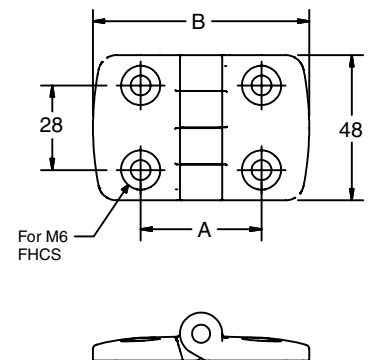
A	B	Hinge Type	Weight (g)	Part #
45	77	Non Removable	43	23-545
		Left Side Mount	43	23-545L
		Right Side Mount	41	23-545R
35	59	Non Removable	35	23-535
		Left Side Mount	35	23-535L
		Right Side Mount	33	23-535R
30	49	Non Removable	28	23-550
		Left Side Mount	28	23-550L
		Right Side Mount	28	23-550R

Application Chart

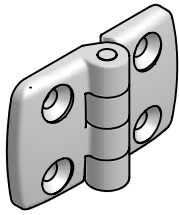
Mounting Surface 1	Mounting Surface 2	Gap (mm)	Non-Rem Hinge	Left Hinge	Right Hinge
40 Series	40 Series	5	23-545	23-545L	23-545R
40 Series	Panel	—			
28 Series	40 Series	1	23-535	23-535L	23-535R
30 Series	40 Series	0			
28, 40 Series	Panel	—	23-550	23-550L	23-550R
30 Series	30 Series	0			
30, 28 Series	Panel	—			
30 Series	30 Series	5			
28 Series	28 Series	7			

Recommended Hardware

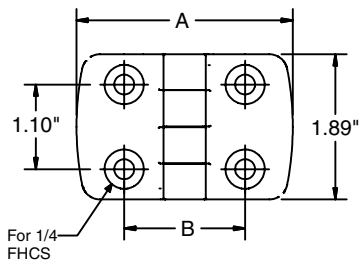
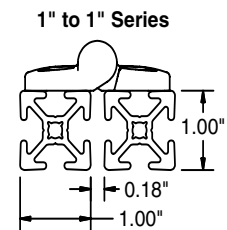
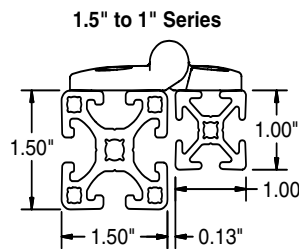
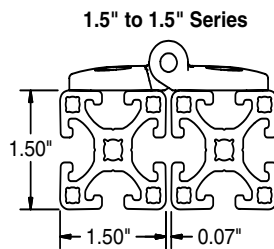
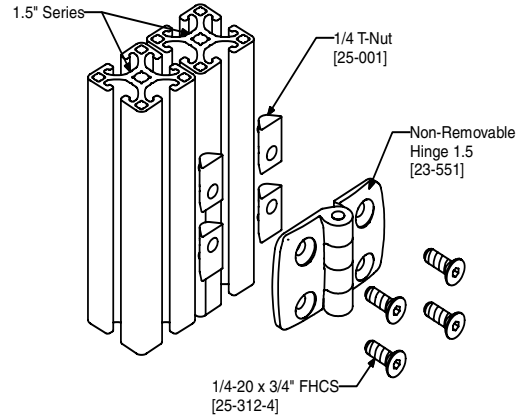
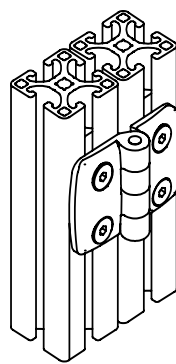
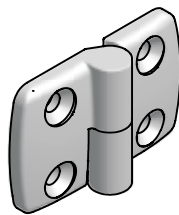
Series	Screw	T-Nut	Panel	Screw	T-Nut
28	24-214-6	20-055	—	—	—
30	24-214-6	20-056	6mm Panel	24-220-6	24-716-6
40	24-216-6	20-056	8mm Panel	24-220-6	24-716-6



Medium Duty Plastic (Inch)



NON-REMOVABLE



Application

High quality plastic hinges for constructing medium duty guard/ enclosure doors. Hinges are offered in two types: lift off (for left and right hand doors) and non-removable.

Technical Data

Glass-filled Nylon, Black
Stainless Steel Pin
Max Torque: 100Nm (74 ft-lbs)

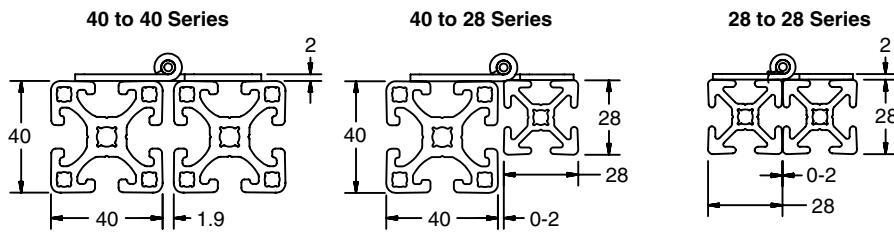
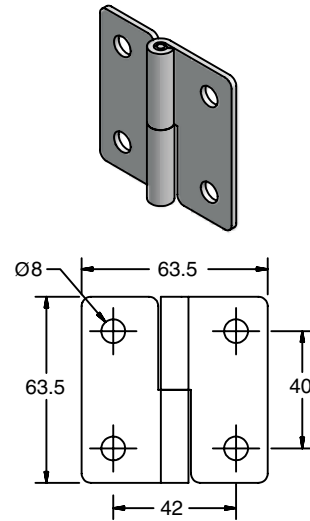
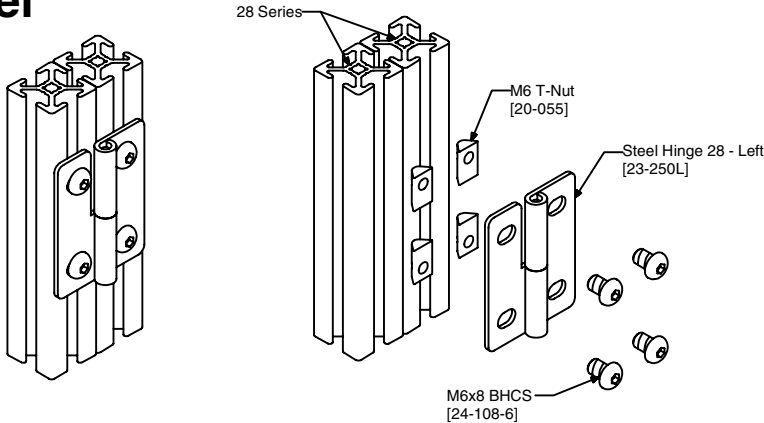
Recommended Fastening Hardware (Order Separately)

Series	Screws	T-Nuts
1.5"	25-212-4	25-001, 20-083 or 20-193
1"	25-208-4	25-031, 25-034 or 25-036

Ordering Information

A	B	Hinge Type	Weight (g)	Part #
2.74"	1.57"	Non Removable, 1.5" to 1.5"	43	23-551
		Left Side Mount, 1.5" to 1.5"	43	23-551L
		Right Side Mount, 1.5" to 1.5"	41	23-551R
2.28"	1.38"	Non Removable, 1.5" to 1"	35	23-552
1.93"	1.18"	Non Removable, 1" to 1"	28	23-550
		Left Side Mount, 1" to 1"	28	23-550L
		Right Side Mount, 1" to 1"	28	23-550R

Steel



Application

Steel hinges for constructing guard/ enclosure doors. Lift off option allows access into enclosure. Specify a left hand or right hand lift-off hinge set depending on required direction of door opening.

Technical Data

Steel, Black Zinc Plated

Recommended Fastening Hardware (Order Separately)

Series	Screws	T-Nuts
40	24-112-8	Any 40 Series M8
28	24-108-6	Any 28 Series M6
1.5"	25-108-4	25-001, 20-083 or 20-193
1"	25-106-4	25-031, 25-034 or 25-036

Ordering Information

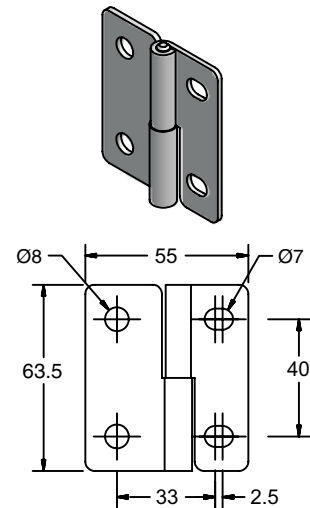
Description	Unit*	Weight	Part #
Steel Hinge 40/1.5" - Left	Each	18g	23-252L
Steel Hinge 40/1.5" - Fixed	Each	18g	23-252***
Steel Hinge 40/1.5" - Right	Each	18g	23-252R
Steel Hinge 40/1.5" to 28/1" - Left	Each	14g	23-251L
Steel Hinge 40/1.5" to 28/1" - Fixed	Each	14g	23-251**
Steel Hinge 40/1.5" to 28/1" - Right	Each	14g	23-251R
Steel Hinge 28/1" - Left	Each	13g	23-250L
Steel Hinge 28/1" - Fixed	Each	13g	23-250*
Steel Hinge 28/1" - Right	Each	13g	23-250R

*Order 23-250L & 23-250R

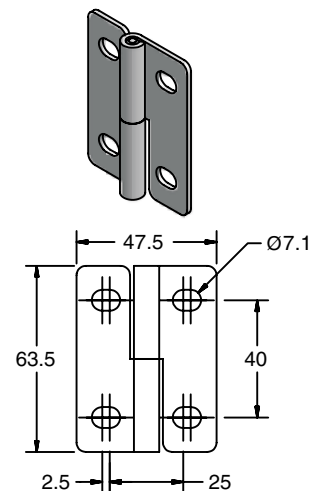
**Order 23-251L & 23-251R

***Order 23-252L & 23-252R

23-252



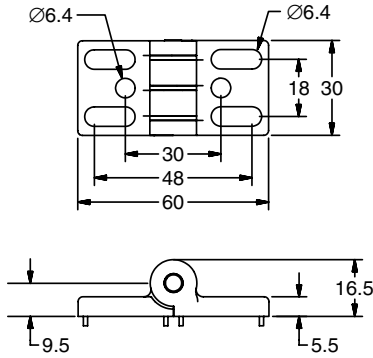
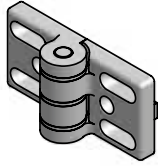
23-251



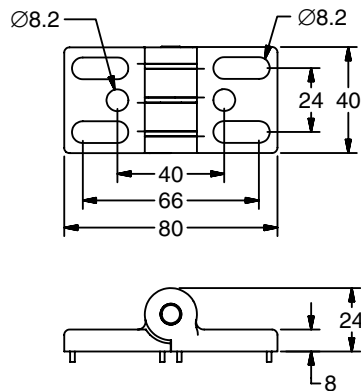
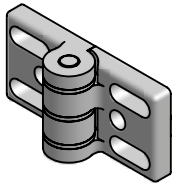
23-250



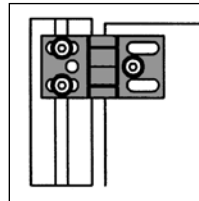
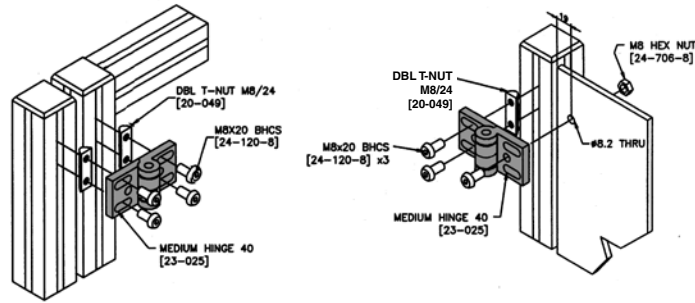
Medium 40



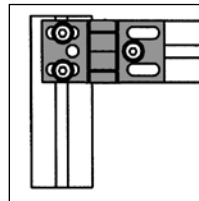
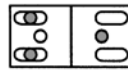
23-024



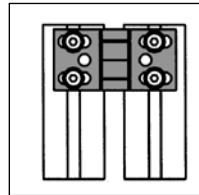
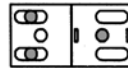
23-025



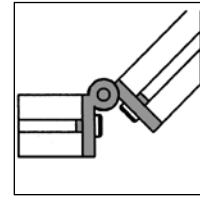
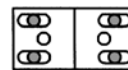
1 Fastening to vertical profile and panel element (all anti-torsion pins removed).



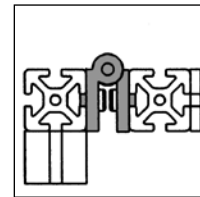
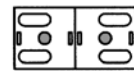
2 Fastening to vertical and horizontal profiles (2 anti-torsion pins removed).



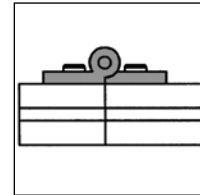
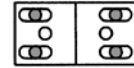
3 Fastening to vertical profiles (all anti-torsion pins removed).



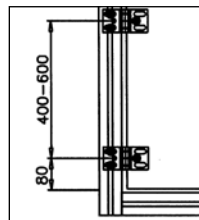
4 End face fastening of two profiles (with torsion pins).



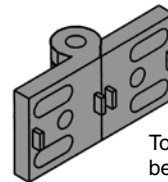
5 Connection of two horizontal profiles (all anti-torsion pins removed).



6 Connection of two horizontal profiles (with anti-torsion pins)



Positioning of hinges on a panel



Torsion pins can be removed with a screwdriver

Application

Suitable for medium loads such as machine and guard/enclosure doors, and as an angle connecting element for profiles. Fastens to T-Slot or profile face with integral torsion pins for precise squaring.

Ordering Information

Description

- Medium Hinge 30
- Medium Hinge 40
- Medium Hinge 40 (Locking)

Technical Data

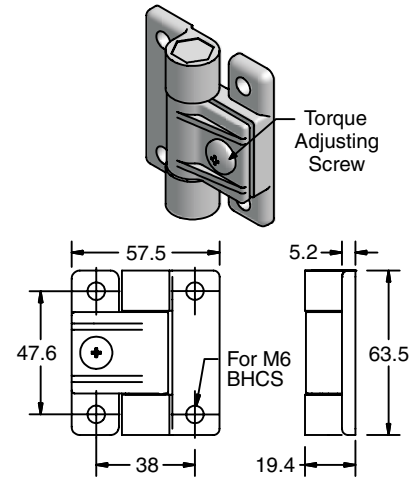
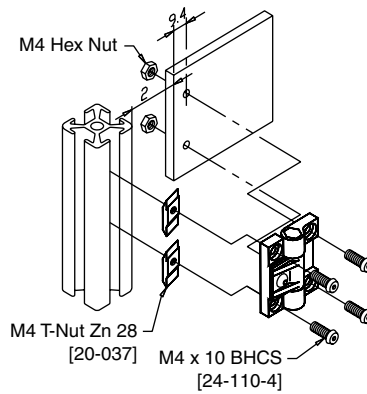
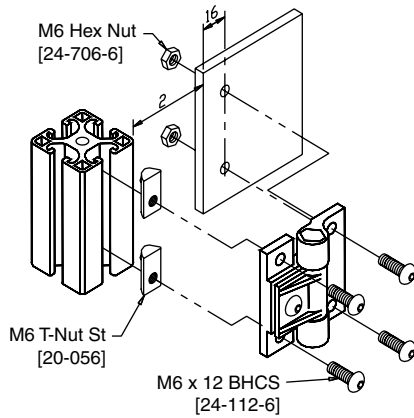
Zinc Cast, Galvanized, Black
Max Load: 500N (112lbs)

Order Hardware Separately Per Hole

Series	Screw	T-Nut
40	24-120-8	20-058
30	24-116-6	20-056

Unit	Weight	Part #
Each	0.18 kg	23-024
Each	0.18 kg	23-025
Each	0.20 kg	23-025L

Adjustable



23-222

Application

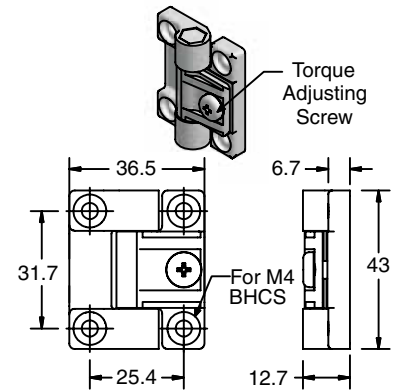
Adjustable tension hinge for swinging doors to hold door open, partially open or closed. Can also adjust speed of opening or closing.

Technical Data

Acetal, Black
Polycarbonate hinge pin
Maximum Torque: 23-220 80 Ncm
23-200 400 Ncm

Recommended Fastening Hardware (Order Separately)

Part #	Series	Screws	T-Nut	Hex Nut
23-222	40	(2) 24-112-6 (2) M6 sized for panel	(2) 20-056	(2) 24-706-6
	1.5"	25-110-4	25-001, 20-083 or 25-193	(2) 25-706-4
23-220	28	(2) 25-110-4 (2) M4 sized for panel	(2) 20-037	(2) 24-706-4
	1"	25-106-1	25-045	—

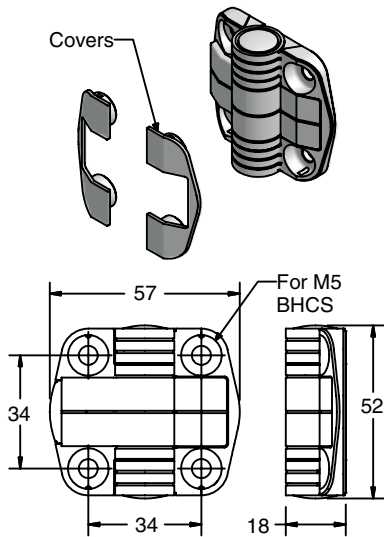


23-220

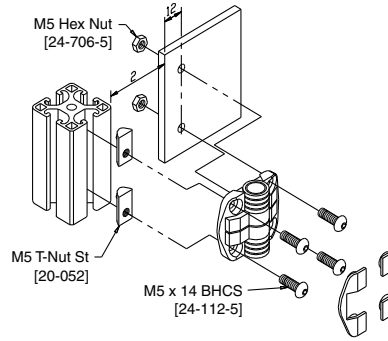
Ordering Information

Description	Unit	Weight	Part #
Adjustable Hinge 40/1.5"	Each	42 g	23-222
Adjustable Hinge 28/1"	Each	38 g	23-220

Positioning



23-226



Application

Multiple position hinge for swinging doors. Models with preset angles also open to 180°.

Technical Data

Acetal, Black
Positioning Torque: 1.1 Nm
Maximum Load: 450N

Recommended Fastening Hardware (Order Separately)

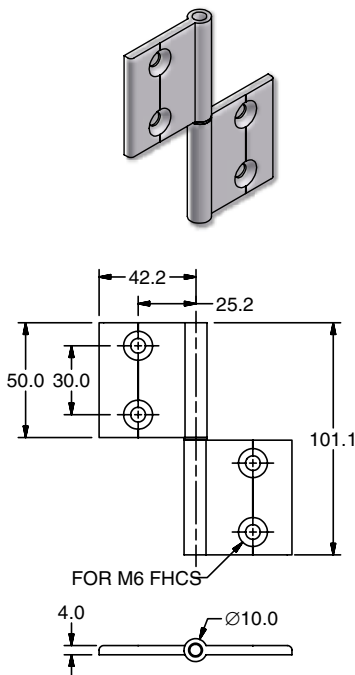
Profile to Panel

Screws	T-Nut	Hex Nut
(4) 24-112-5	(2) 20-052	(2) 24-706-5

Ordering Information

Description	Unit	Weight	Part #
Positioning Hinge 120°	Each	37 g	23-226

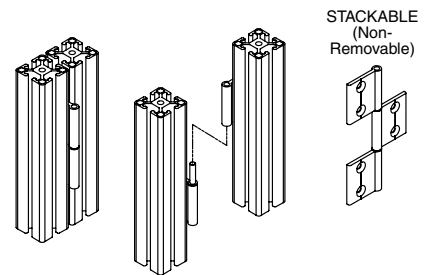
Concealed



23-225

Application

For inside or concealed door or lids. Used with 40 Series profiles using M6 T-nuts. Concealed hinges are stackable to create non-removable hinges. To create a stackable hinge, order an additional hinge half and an additional hinge pin.



Technical Data

Wings: Aluminum
Bolt: Stainless Steel

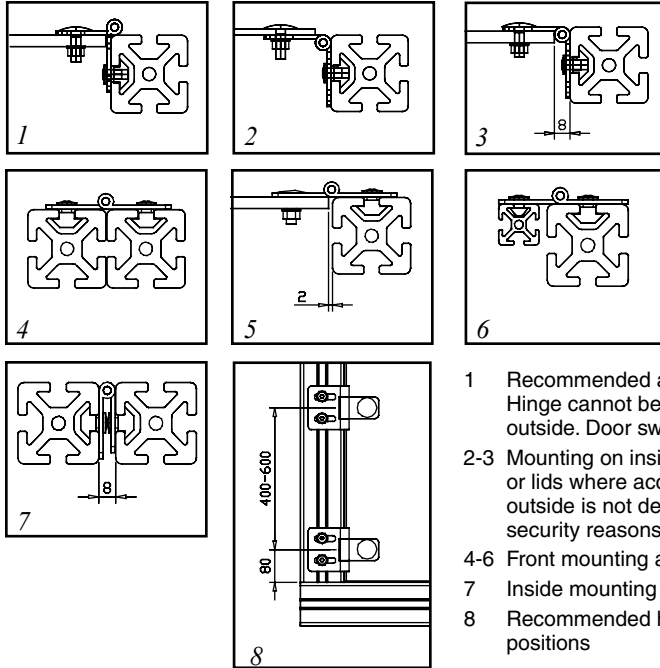
Recommended Fastening Hardware (Order Separately)

Screws	T-Nuts
(4) 24-216-8	(4) 20-056

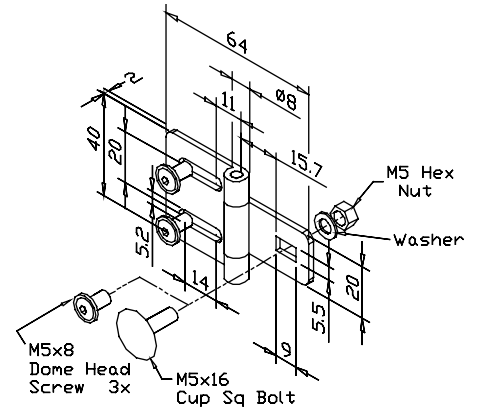
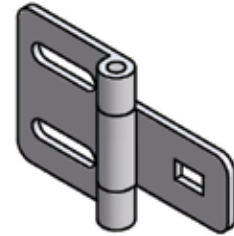
Ordering Information

Description	Unit	Weight	Part #
Full Hinge	1 Set	39.8 g	23-225
Half Hinge	Each	24 g	23-225z1
Hinge Pin	Each	11.8 g	23-225z2

Multi-Series



- 1 Recommended attachment. Hinge cannot be loosened from outside. Door swings 180°
- 2-3 Mounting on inside of doors or lids where access from outside is not desired for security reasons.
- 4-6 Front mounting applications
- 7 Inside mounting clearance
- 8 Recommended hinge positions



Application

For outside or inside of doors and lids.
Used with 40, 30, 28, 20, 1.5" and 1" Series profiles using M5 T-nuts St or Zn.

Technical Data

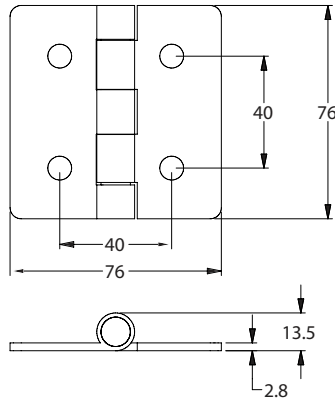
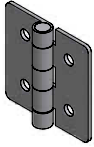
St, black
Includes: M5x16 cup square bolt, M5 hex nut, M5 washer, three M5x8 dome head screws. Order M5 T-nuts separately.
Max. load 250 N (56 lbs)

23-016

Ordering Information

Description	Unit	Weight	Part #
Multi-Series Hinge	1 set	51 g	23-016

Butt Hinge 40



23-011
23-011B

Application

Steel hinge for constructing profile framed doors or panel doors. Available in medium and heavy duty version.

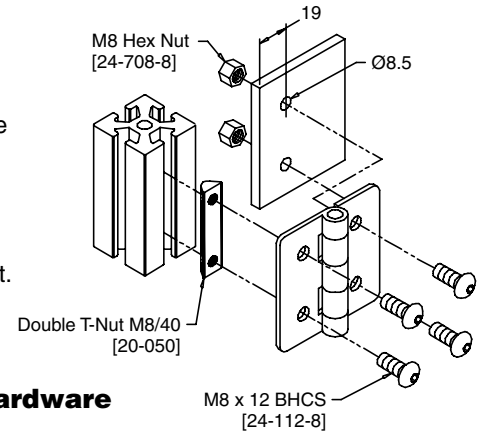
Technical Data

Steel, Zinc Plated or Black Powdercoat.

Recommended Fastening Hardware (Order Separately)

Attachment to T-Slot

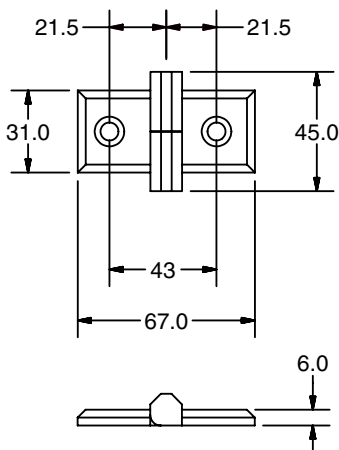
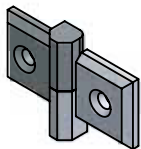
Mounting	Screws	T-Nuts	Hex Nuts
To 40 Series (Per Hinge Side)	(2) 24-112-8	(1) 20-050	—
To Panel (Per Hinge Side)	(2) 24-112-8	—	(2) 24-708-8



Ordering Information

Description	Unit	Weight	Part # (Clear)	Part # (Black)
Steel Hinge, Heavy Duty 40	Each	160 g	23-011	23-011B

Lift-Off Hinge 40



23-440

Application

Versatile hinge for 40 series profiles. For lift-off and non-removable door configurations. Two T-slot alignment blocks are included.

Technical Data

Zinc die cast, black powder coat
Pin: St., zinc plated
Maximum torque 100 Nm (74 ft-lbs)

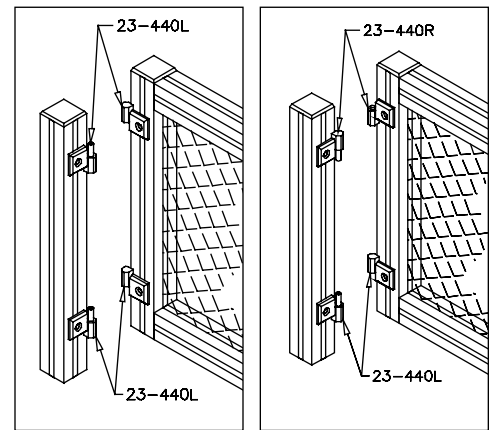
Order all hardware separately.

Attachment to 40 series profiles

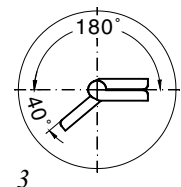
Screws	T-Nuts
24-216-6	20-056 or 20-080

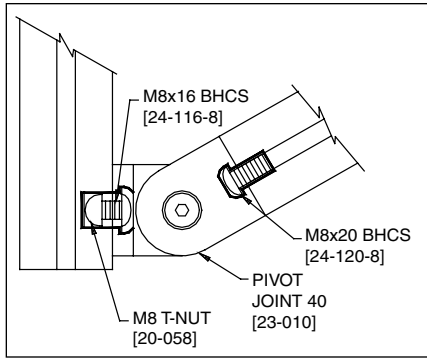
Ordering Information

Description	Unit	Weight	Part #
Lift-Off Hinge 40 Left	1 set	70 g	23-440L
Lift-Off Hinge 40 Right	1 set	70 g	23-440R

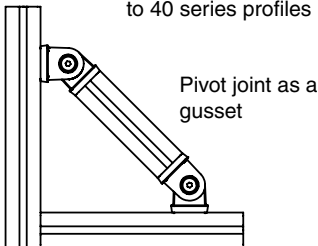


- 1 Lift-Off Door (load supported by two hinges)
- 2 Non-removable door (load supported by one hinge)
- 3 Range of swing

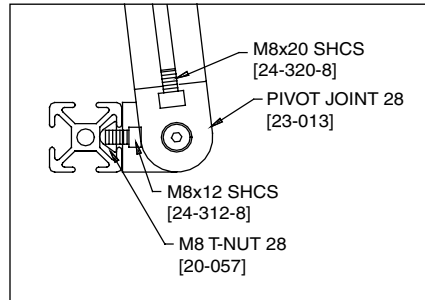




Attaching Pivot Joint 40 to 40 series profiles



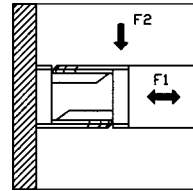
Pivot joint as a gusset



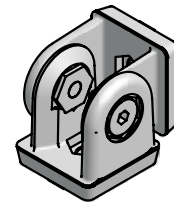
Attaching Pivot Joint 28 to 28 series profiles

	Load	
	F1 (N)	F2 (N)
23-010: Pivot Joint 40		
Fixed connection	5000	2500
Movable connection	750	750
23-013: Pivot Joint 28		
Fixed connection	1600	800
Movable connection	250	250

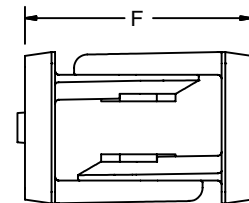
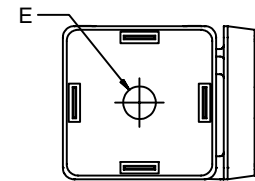
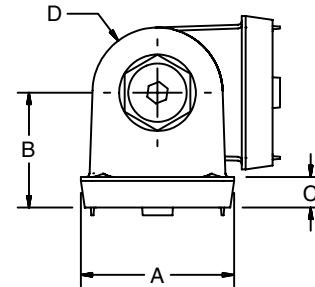
Dimensions (mm or inch)						
Series	A	B	C	∅D	∅E	F
40	40	30	9	40	8.5	60
28/30	28	22.5	7	27	8.3	45
1.5"	1.57"	1.18"	0.16"	1.34"	0.335"	2.36"
1"	1.10"	0.89"	0.28"	1.04"	0.260"	1.78"



Pivot Joint



23-010
23-013
23-260
23-262



Application

For connecting profiles at various angles from 0° to 180°. Eliminates the need for a miter cut. Die cast inserts provide alignment with the profile end and prevents rotation.

Technical Data

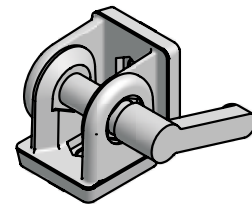
Zinc Die-Cast, Galvanized
 Finishes available: Clear or Black.
 Order all hardware separately

Recommended Fastening Hardware (Order Separately)

Series	Attachment to T-Slot		Attachment to End of Profile
	Screws	T-Nut	Screws
40	24-116-8	20-058	24-120-8
28/30	24-312-8	20-057	24-320-8
1.5"	25-110-5	25-002, 20-082 or 20-182	25-112-5
1"	25-108-4	25-031, 25-034 or 25-036	25-112-4

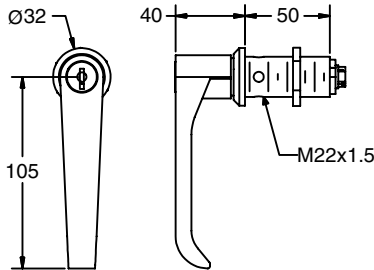
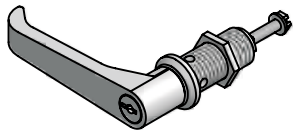
Ordering Information

Series	Description	Unit	Weight	(Clear)	(Black)
40	Pivot Joint	Each	0.37 kg	23-010	23-010B
	Pivot Joint w/Clamp Handle	Each	0.41 kg	23-014	23-014B
30, 28	Pivot Joint	Each	0.11 kg	23-013	23-013B
	Pivot Joint w/Clamp Handle	Each	0.18 kg	23-015	23-015B
1.5"	Pivot Joint	Each	0.32 kg	23-262	
	Pivot Joint w/Clamp Handle	Each	0.41 kg	23-263	
1"	Pivot Joint	Each	0.11 kg	23-260	
	Pivot Joint w/Clamp Handle	Each	0.18 kg	23-261	

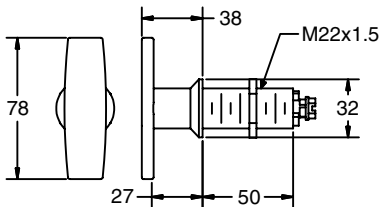
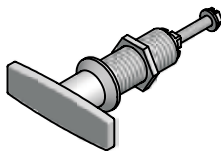


23-014
23-015
23-261
23-263

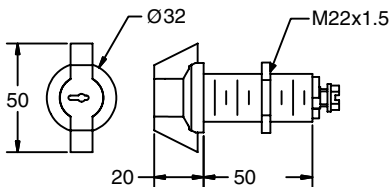
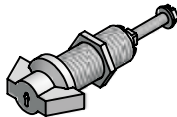
Quarter Turn Extrusion Mount



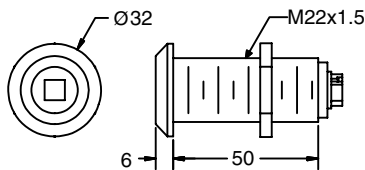
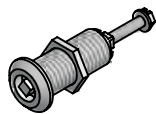
23-038
23-039



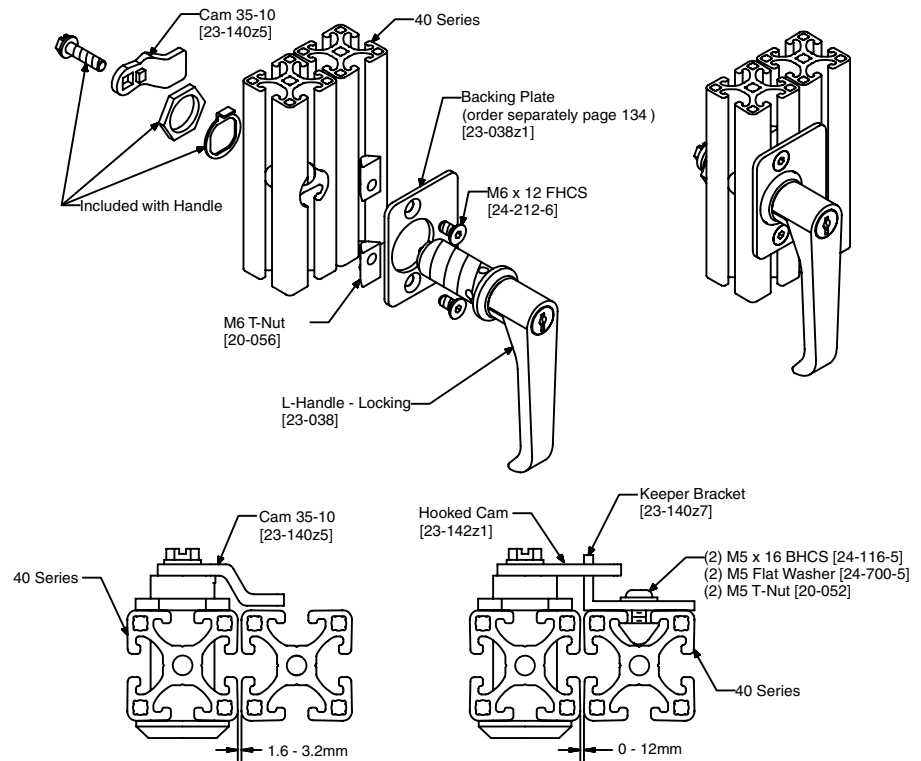
23-133



23-134



23-135



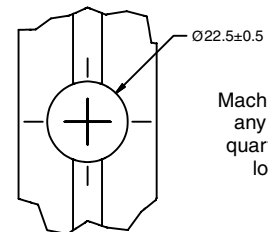
Application

Used for swinging, sliding or bi-fold door applications. Latch mounts through machined hole in extrusion.

Technical Data

Handle: Polyamide, Black

Housing/Insert: Zinc Die Cast, Black Powdercoat.



Machining for any of the quarter turn locks.

Ordering Information

Profile

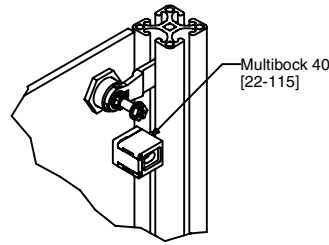
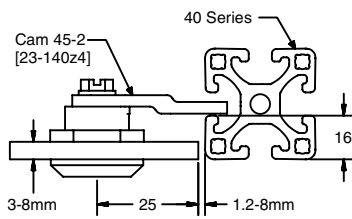
Series	Description	Unit	Weight	Part #
40	L-Handle, Locking ^{1*}	Each	201 g	23-038
	L-Handle, Non-Locking*	Each	201 g	23-039
	T-Handle, Non-Locking*	Each	200 g	23-133
	Wing Knob, Locking ^{1*}	Each	160 g	23-134
	Square Insert ^{2,3*}	Each	50 g	23-135
28/30	L-Handle, Non-Locking*	Each	201 g	23-041
	L-Handle, Locking ^{1*}	Each	201 g	23-040

1. All locks come keyed alike except 28 Series; special keying options available as special order.

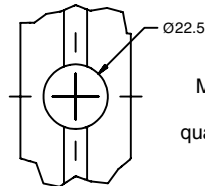
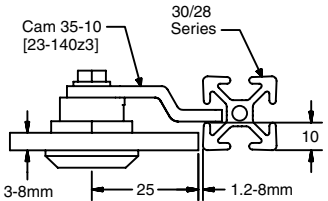
2. Additional style inserts are available as special orders.

3. Order key separately (see page 138).

* Includes 23-038Z3 Keeper

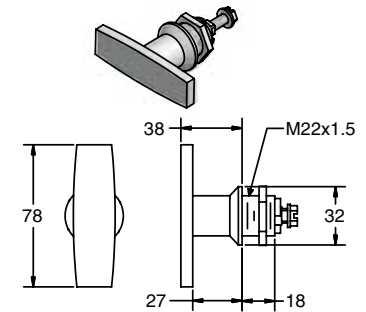


Add a multiblock as a door stop for panel doors.

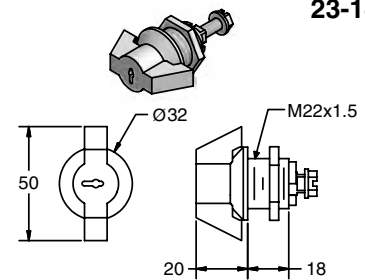


Machining for any of the quarter turn lock.

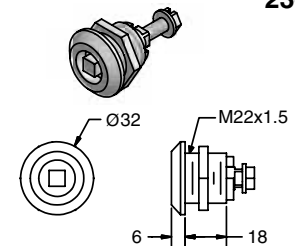
Quarter Turn Panel Mount



23-143



23-144



23-145

Application

Used for swinging or sliding door applications. Latch mounts directly to panel.

Technical Data

Handle: Polyamide, Black
Housing/Insert: Zinc Die Cast, Black Powdercoat.

Ordering Information

Description

- T-Handle, Non-Locking
- Wing Knob, Locking¹
- Square Insert²

Unit	Weight	Part #
Each	135 g	23-143
Each	90 g	23-144
Each	50 g	23-145

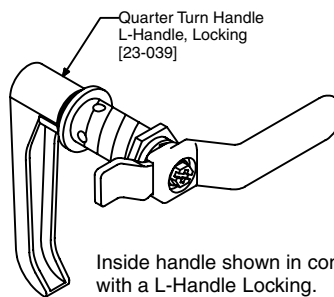
- 1 All Locks come keyed alike; special keying options available as special order.
- 2 Additional style inserts are available as special orders.
3. Order key separately (see page 138).

Application

Can be combined with any of our quarter turn handles to extend operation to inside of door.

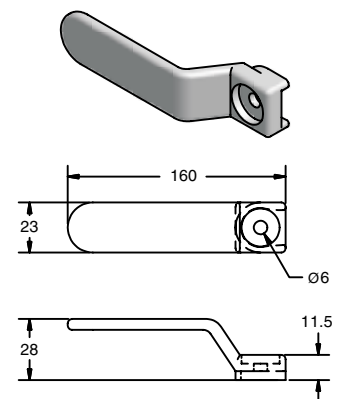
Technical Data

Polyamide, Red
Requires screw and 2 washers.



Inside handle shown in combination with a L-Handle Locking.

Inside Handle



23-159

Suggested Fastening Set (Order Separately)

With Outside Handle	Screw	Washers
23-038, 23-039, 23-133	24-345-6	24-707-6, 24-711-6
23-040, 23-041	24-335-6	24-707-6, 24-711-6

Ordering Information

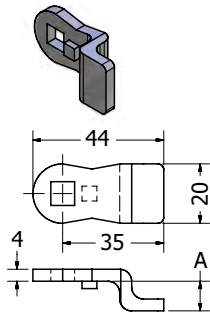
Description

Inside Handle

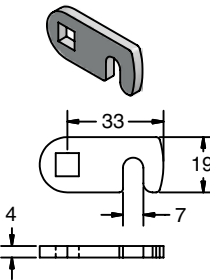
Unit	Weight	Part #
Each	0.9 g	23-159



Cams & Keys



23-140z4
23-140z5
23-140z6



23-142z1

Application

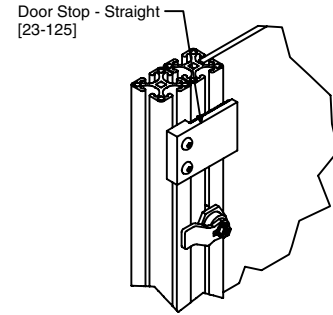
Various cams and keys for the quarter turn latches. You must order one cam per quarter turn lock.

Part #	Dimension A
23-140Z3	8
23-140Z4	2
23-140Z5	10
23-140Z6	-2

Ordering Information

Description

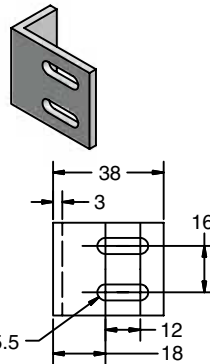
Cam 35-10 (offset 8)
Cam 35-16 (offset 2)
Cam 35-8 (offset 10)
Cam 35-20 (offset -2)
Hooked Cam
Spare Key for 23-038/23-040 & 23-134/23-144
Square Key for 23-135/23-145



Door Stop - Straight [23-125]
Add a door stop to swinging door to create a positive stop.

Unit	Weight	Part #
Each	22 g	23-140Z3
Each	22 g	23-140Z4
Each	18 g	23-140Z5
Each	20 g	23-140Z6
Each	13 g	23-142Z1
Each	4 g	23-140Z1
Each	4 g	23-140Z2

Keeper Bracket



23-140z7

Application

Keeper brackets are used with a hooked cam on bi-fold or sliding doors.

Technical Data

Aluminum, Clear Anodized

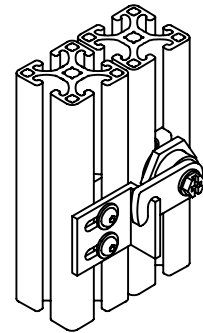
Recommended Hardware (order separately)

Series	Screw	Washer	T-Nut
Metric	24-116-5	24-700-5	20-052
Inch	25-110-2	25-700-2	25-009 or 25-088

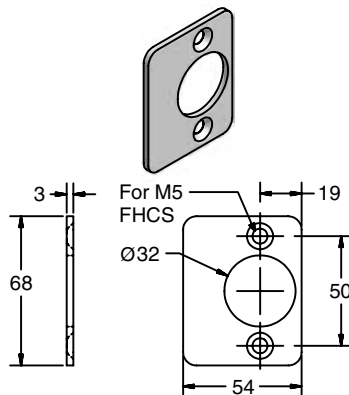
Ordering Information

Keeper Bracket

Unit	Weight	Part #
Each	13 g	23-140z7



Backing Plate



23-038z1

Application

Backing plates can be added to a quarter turn latch and provide a positive stop for the door.

Technical Data

Steel, Matte Black Powder Coated

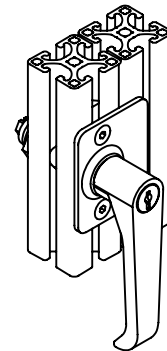
Recommended Fastening Hardware (Order Separately)

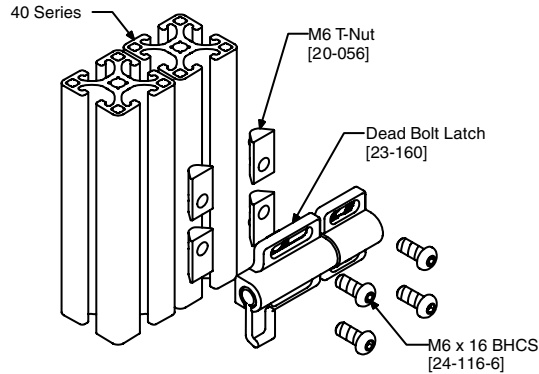
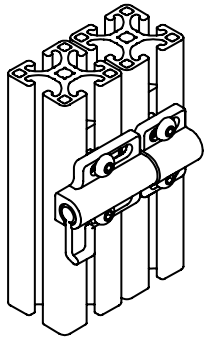
Screws	T-Nut
24-212-5	20-052

Ordering Information

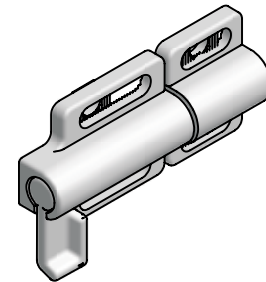
Backing Plate

Unit	Weight	Part #
Each	4.5 g	23-038z1

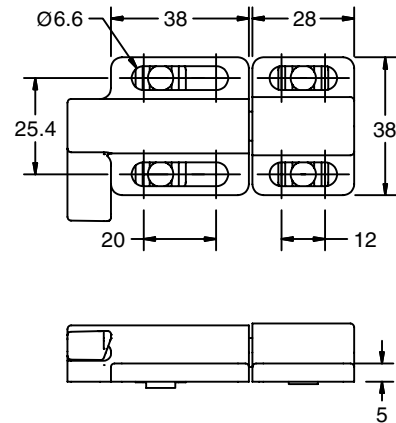




Deadbolt



23-160



Application

Designed to secure doors using a spring loaded latch mechanism. Combine with a door stop for an effective latching solution.

Technical Data

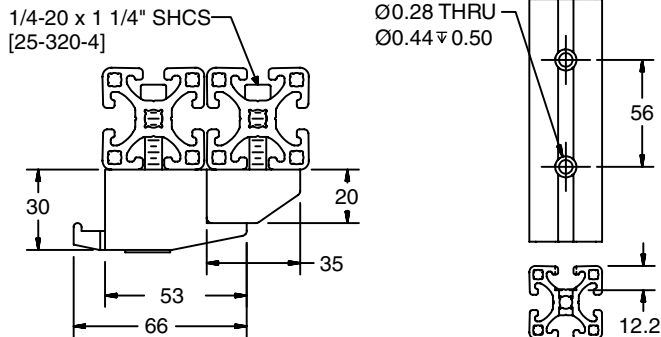
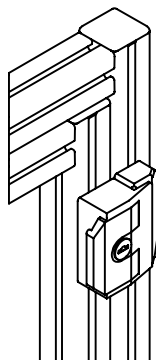
Die-Cast Zinc, Clear

Recommended Hardware (order separately)

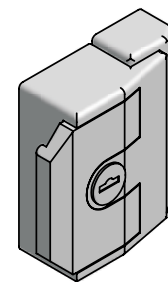
Profile Series	Screws (4)	T-Nut (4)
40	24-116-6	20-056
28/30	25-108-4	25-031
1.5"	25-110-4	25-001, 20-083 or 20-193
1"	25-108-4	25-031, 25-034 or 25-036

Ordering Information

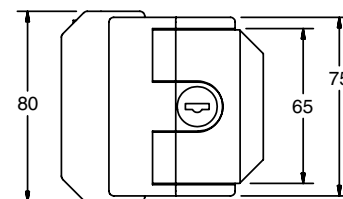
Series	Description	Unit	Weight	Part #
40, 30 & 28	Dead Bolt Latch	Each	9 g	23-160



Slam Latch



**23-155
 23-156**



Application

High strength latch designed to securely close door to the frame. An optional key locking version is available for extra security.

Technical Data

Die-Cast Zinc, Black

Recommended Fastening Hardware (Order Separately): 25-320-4

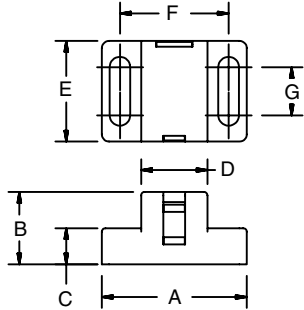
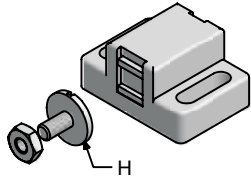
Ordering Information

Description	Unit	Weight	Part #
Slam Latch - Locking*	Each	1.25 lb	23-155
Slam Latch - Non-Locking	Each	1.25 lb	23-156

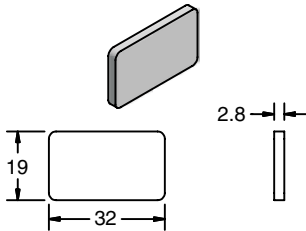
*All locks come keyed alike; special keying options available as special order.



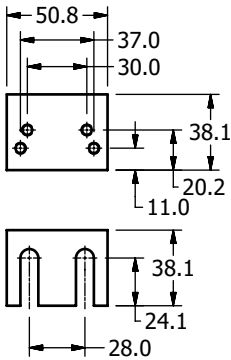
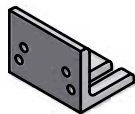
Magnetic Catches



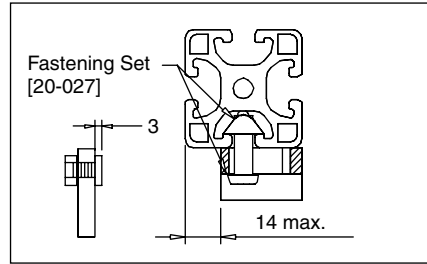
23-045
23-046



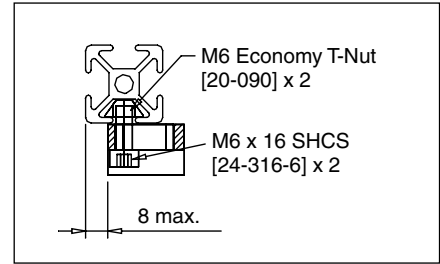
23-051



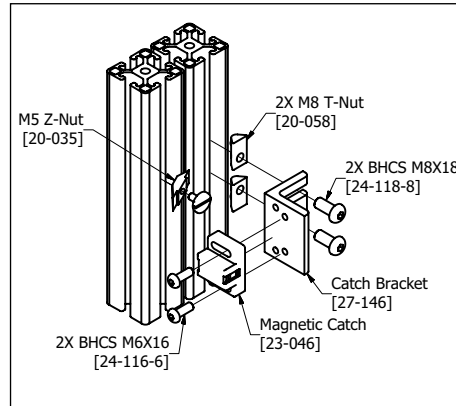
27-146



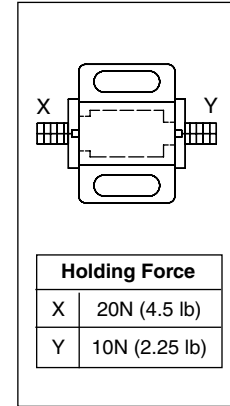
1



2



3



4

- 1 Mounting of 40 Series profile
- 2 Mounting of 28 Series profile
- 3 Assembly of Bracket on 40 Series profile
- 4 Holding force

Holding Force	
X	20N (4.5 lb)
Y	10N (2.25 lb)

Application

Quick catch for swinging or sliding doors. For different holding strengths, rotate catch 180°. Adjustable mounting position using slotted holes and appropriate mounting bracket if needed. Complete with pan head screw, or add optional plate for smooth mounting

Technical Data

Magnetic Catch: Glass Filled Nylon
 Strike Plate: Steel, Zinc Plated with pressure sensitive adhesive backing.
 Mounting Bracket: Aluminum, Clear Anodized.

Recommended Fastening Hardware* (Order Separately)

Series	Screws	T-Nuts
40	(2) 24-120-6	(2) 20-056
28/30	(2) 24-316-6	(2) 20-090
20	(2) 24-110-4	(2) 20-044
1.5"	25-112-4	25-001, 20-083 or 20-193
1"	25-108-2	25-030, 20-088 or 25-035

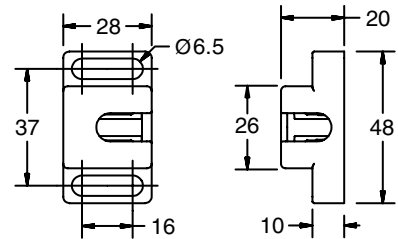
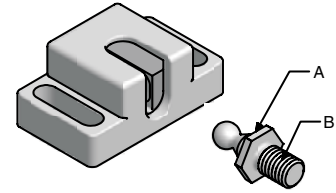
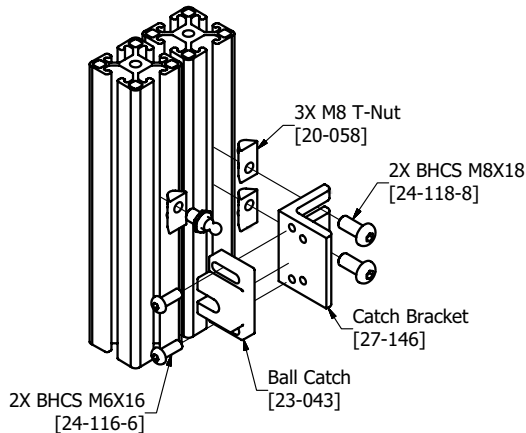
Ordering Information

Series	A	B	C	D	E	F	G	H	Weight	Part #
40, 30, 28, 1.5"	40	20	10	18.32	27.8	30	12.9	M5x12	38 g	23-046
20, 1"	28	14	6	12	17	20	7.7	M4x5	9 g	23-045
All	See drawing								8 g	23-051

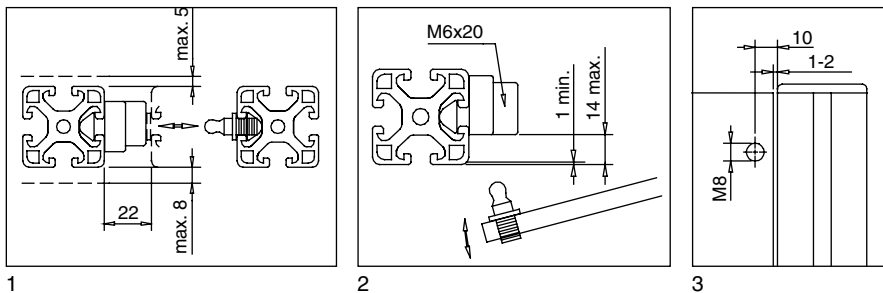
Bracket

Use w/Catch	Description	Thread	Unit	Weight	Part #
23-046	Single Bracket 40	M6	Each	60 g	27-146

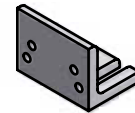
Ball Catch PA



**23-043
 23-121**



- 1 Attachment to a sliding door
- 2 Attachment to a swinging door
- 3 Mounting dimensions



Application

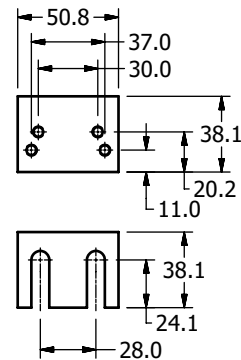
Catch for use on swinging and sliding doors. Brackets can be used to mount the catch in the location that you desire.

Technical Data

Housing: Glass-filled Nylon, Black
 Ball Screw: Stainless Steel
 Bracket: Aluminum, Anodized
 Holding Force: 6.7 - 11 lbs

Recommended Fastening Hardware (Order Separately)

Part #	Screws	T-Nuts
23-043 + 27-146	(2) 24-114-8 and (2) 24-114-6	(3) 20-058
23-043 only	(2) 24-114-6	(1) 20-056
23-121 + 27-146	(2) 25-110-5 and (2) 25-112-4	(2) 25-002 or (1) 25-042 plus (1) 25-001



27-146

Ordering Information

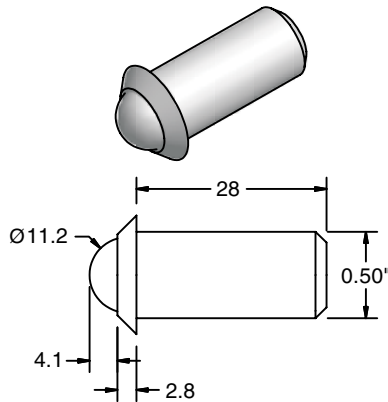
Series	Description	A (Hex)	B (Thread)	Unit	Weight	Part #
40	Ball Catch	13	M8	Each	23 g	23-043
40/1.5"	Ball Catch	1/2"	1/4-20	Each	29 g	23-121

Bracket

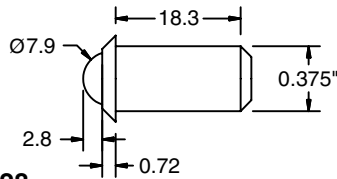
Description	Thread	Unit	Weight	Part #
Catch Bracket 40/1.5"	M6	Each	60 g	27-146



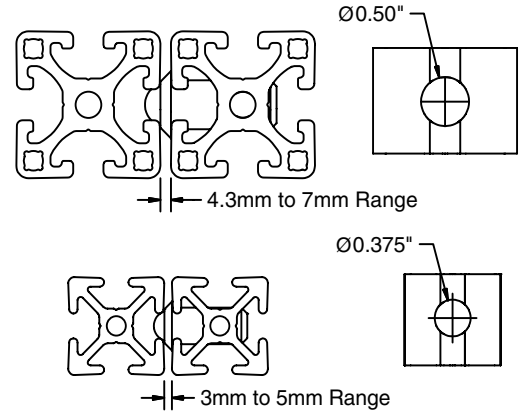
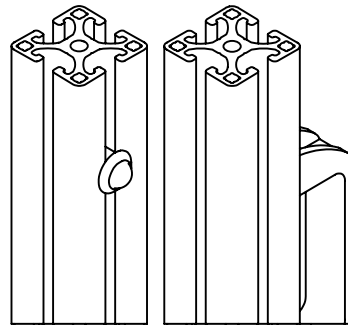
Ball Plungers



23-129



23-128



Application

An economical solution to hold swinging doors closed. The ball plunger presses easily into a machined hole in the extrusion, and the force of the ball in combination with a T-Slot on the door frame holds the door closed.

Technical Data

Housing: Steel, Black Oxide
 Ball: Nylon

Part#	Holding Force
23-128	5-14 lbs.
23-129	8-18 lbs.

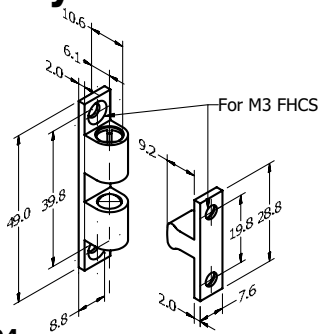
Ordering Information

Profile Series	Description
40, 30	Ball Plunger, 1/2" Dia. x 28mm
28	Ball Plunger, 3/8" Dia x 18mm

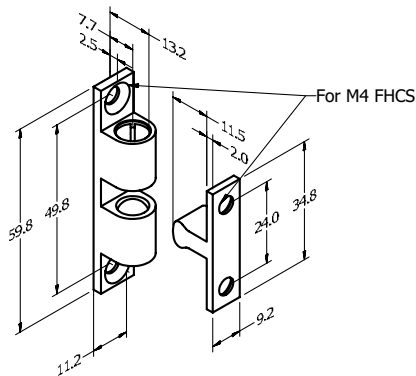
Unit	Weight	Part #
Each	22.7 g	23-129*
Each	13.6 g	23-128*

* Requires service 19-022

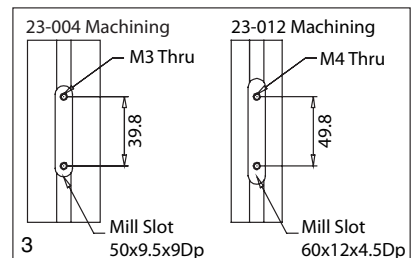
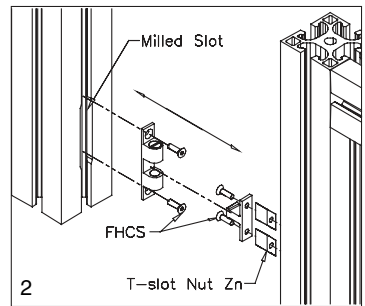
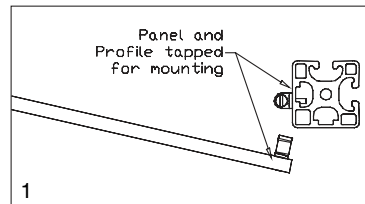
3-Way Ball Catch



23-004



23-012



- 3-Way Ball Catch on swinging door
- 3-Way Ball Catch on sliding door
- Servicing of the slot for 23-004 on 40 Std or 28/30 series profiles for sliding doors. For 40 series Heavy or Light profiles mill slot 58x9.5x12.3 Dp.

Technical Data

Brass, chrome finish with two steel balls for adjustable spring tension

Order all hardware separately

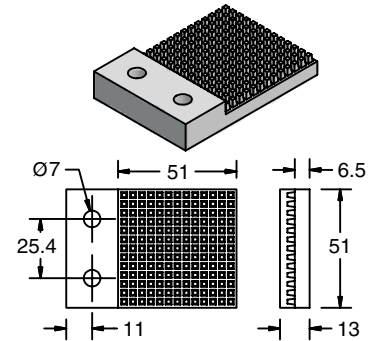
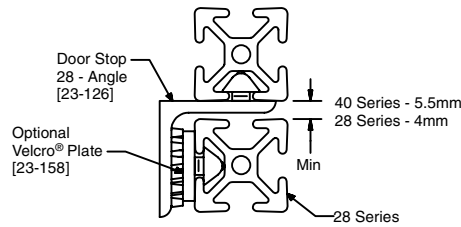
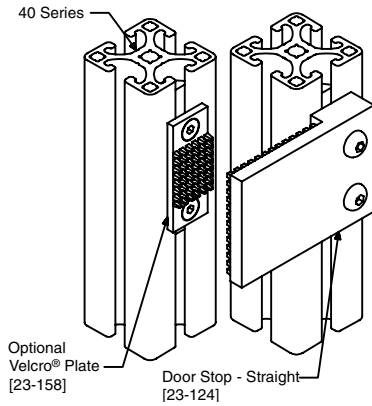
Part # 23-004	(4) 24-210-3
Part # 23-012	(4) 24-208-4

Description

- 3-Way Ball Catch, Small
- 3-Way Ball Catch, Medium

Unit	Weight	Part #
1 set	26 g	23-004
1 set	40 g	23-012

Light Duty Door Stops



23-124

Application

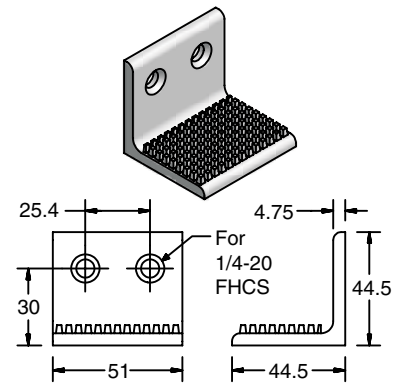
Door Stops provide a positive stop to keep the door lined up with a frame. An optional Velcro® plate can be added to create a light-duty catch.

Technical Data

Aluminum, Clear Anodized with Velcro® Pad

Recommended Fastening Hardware (Order Separately)

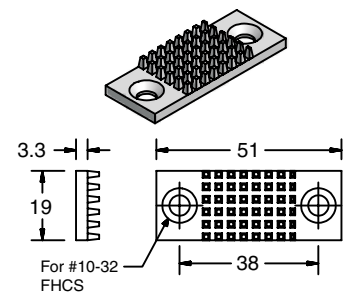
Profile Series	Fastener	Part # 23-124	Part # 23-125	Part # 23-158
40/30 1.5"	Screws	25-114-4	25-210-4	25-208-2
	T-Nuts	25-001 or 20-083	25-001 or 20-083	25-009 or 20-088
28	Screws	25-112-4	25-208-4	25-208-2
	T-Nuts	25-055	25-055	20-038
1"	Screws	25-112-4	25-206-2	25-206-2
	T-Nuts	25-031 or 25-034	25-030 or 25-035	25-030 or 25-035



23-125

Ordering Information


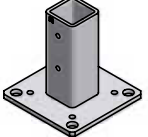




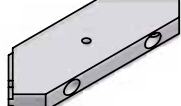

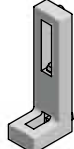


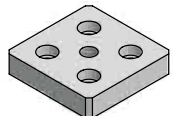
Description	Unit	Weight	Part #
Door Stop - Straight	Each	91 g	23-124
Door Stop 40, 30 - Angle	Each	91 g	23-125
Velcro® Plate	Each	9 g	23-158



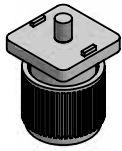
23-158*

* For wider surfaces, use 22-145 and apply velcro strip. Order hardware separately.

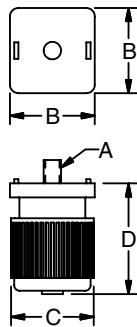
Section 6 Feet & Casters

Leveling Feet Anti-Vibration Bolt Down	156-157 158 158		Flange Feet	165	
Knuckle Feet	159-160		Hollow King Pin Casters	167	
Knuckle Foot Accessories Rubber Insert Clamping Shoe	161 161		Threaded Casters	168	
Corner Mounting Plate	161		Top Plate Casters	169	
L-Base Leveling Foot Floor Anchor	162 162		Floor Lock	169	
Floor Brackets Economy Floor Brackets	163 164		Adapter Plates Base Plates Base Plates (SMART)	170 171 172	

Leveling Foot



21-001
21-001-30

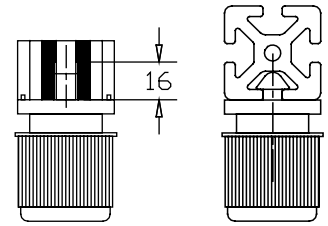


Application

For leveling tables and light equipment stands. Ratchet-type adjustment on 21-001 requires no tools. 21-001-30 is height adjustable by hand or with tools.

Technical Data

21-001
Base - Glass-filled nylon (Black)
Spindle, nut & disk – Steel, Galvanized
Mounts to end of 40 Series profile with machining 19-012. Fastens to T-Slot using 40 Series T-Nuts



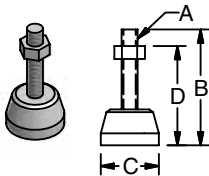
21-001-30

Base - Glass-filled nylon (Black)
Spindle, nut & disk – Steel, Zinc Plated
Mounts to end of 30 Series profile with machining 19-012. Fastens to T-Slot using 30 Series T-Nuts

Ordering Information

Series	A	B	C	Dmin	Dmax	Max Load N (lbs)	Weight (g)	Part #
40	M8x16	40	39	40	65	1500 (337)	68	21-001
30	M8x16	30	30	37	50	1500 (337)	47	21-001-30

Leveling Foot 20



21-007

Application

For leveling of light duty structures constructed of 20 series profiles

Technical Data

Base - Glass-filled nylon (Black)
Spindle, nut & disk – Steel, Zinc Plated

Ordering Information

Profile Series	Dimensions					Max Load N (lbs)	Weight (g)	Part #
	A	B	C	Dmin	Dmax			
20	M5	37	18	12	27	1000 (225)	12	21-007

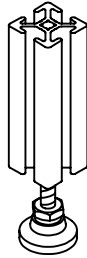
Mounts to end of 20 Series profile with machining 19-012
Fastens to T-Slot using 20 Series T-Nuts

Application

For leveling of light duty structures.
Constructed with a delrin base to protect the surface against scratching.

Technical Data

Base: Delrin (White)
Stud: Steel, Black

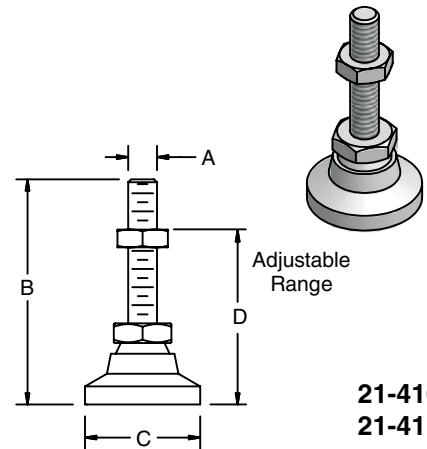


Ordering Information

Profile Series	Dimensions					Load (kg)	Weight (g)	Part #
	A	B	C	D min	D max			
1"	1/4-20	1.94"	1.00"	0.70"	1.44"	91	27	21-410
1.5", 1"	3/8-16	2.88"	1.25"	0.88"	2.38"	136	54	21-411

Dmin is without nut.
21-411 can be used on either 1" or 1.5" Profiles with a baseplate.

Leveling Feet



21-410
21-411

Application

For leveling of structures with high load capacity.

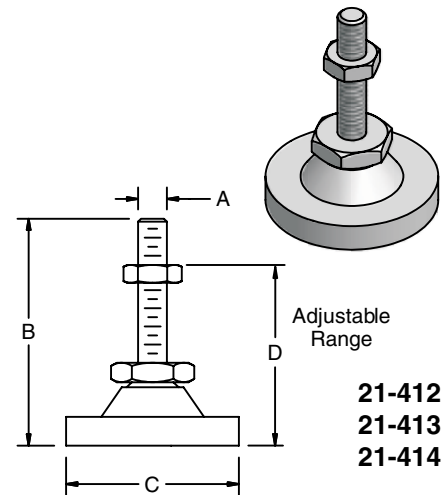
Technical Data

Steel

Ordering Information

Profile Series	Dimensions					Load (kg)	Weight (g)	Part #
	A	B	C	D min	D max			
1"	1/4-20	1.94"	1.00"	0.625"	1.44"	454	45	21-412
1.5", 1"	3/8-16	2.88"	1.25"	0.88"	2.38"	1704	100	21-413
	1/2-13	3.13"	1.88"	1.13"	2.63"	2273	218	21-414

Dmin is without nut.
21-413 & 21-414 can be used on either 1" or 1.5" Profiles with a baseplate.



21-412
21-413
21-414

Application

For leveling of heavy duty structures constructed of 80 x 80 profiles

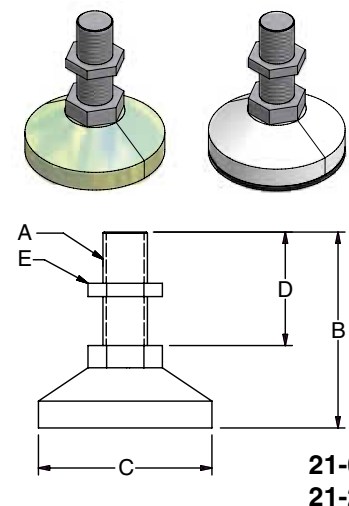
Technical Data

Base: 21-015: Nylon with Non-skid Pad
Spindle & Nut: Steel, Yellow Zinc Plated
Base: 21-224: Yellow Zinc Plated Steel
Spindle & Nut: Steel, Yellow Zinc Plated

Ordering Information

Profile Series	Dimensions					Load (kg)	Weight (g)	Part #
	A	B	C	D	E			
40	M20	89	51	76	27	818	326	21-015
40	M20	89	51	76	27	3350	771	21-224

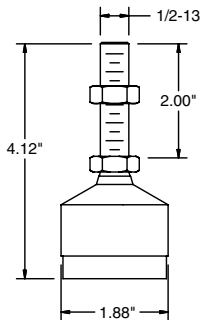
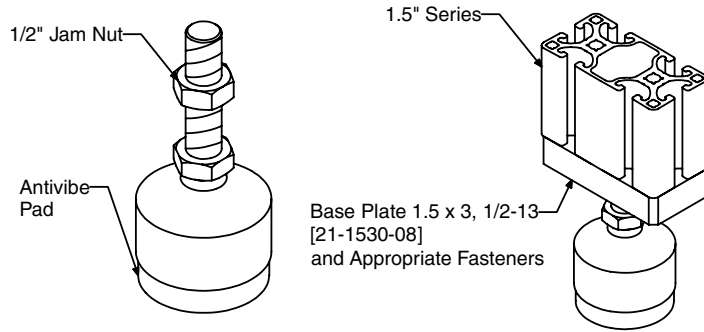
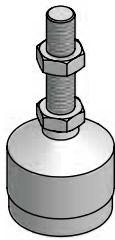
Note: Mounts to end of 80x80 profile with machining 19-010 (4 times) and mounted to base plate 21-028



21-015
21-224



Anti-Vibration



21-422
21-423
21-424

Application

Leveling foot with an anti-vibration pad to reduce transmitted vibration for high precision machinery.

You should use the mount which has the maximum load range which comes closest to the specific weight required for your need. This will reduce 98% of the transmitted vibration on most machinery.

Technical Data

Low Carbon Steel
Yellow Zinc Plated
Anti-Vibration Pad Rubber

Part #	Max Load per Mount
21-422	120
21-423	240
21-424	2400

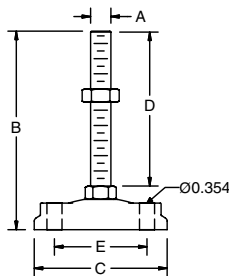
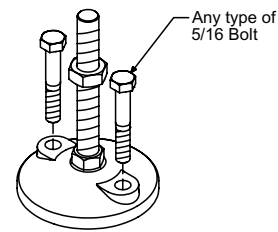
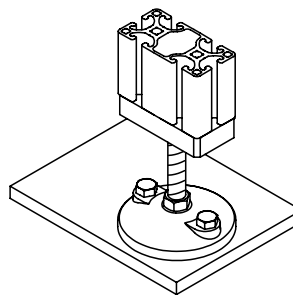
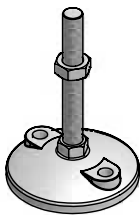
Ordering Information

Description

Anti-Vibe 1/2-13, Light
Anti-Vibe 1/2-13, Medium
Anti-Vibe 1/2-13, Heavy

Unit	Weight	Part #
Each	0.37 kg	21-422
Each	0.37 kg	21-423
Each	0.30 kg	21-424

Bolt Down



21-420
21-421

Application

Leveling foot with holes to allow you to bolt structure directly to the floor or desired surface.

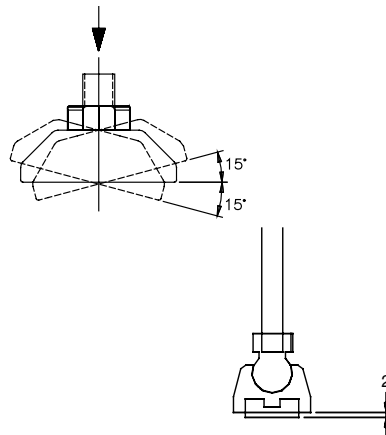
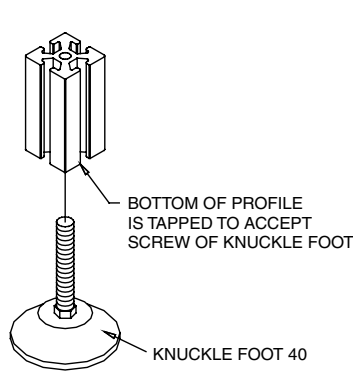
Technical Data

Base - Glass filled Nylon, Black
Thread & Nut - Steel Galvanized, Black
Max Load - 1100 lbs

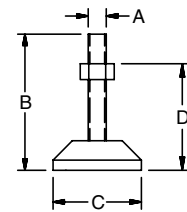
Ordering Information

Dimensions					Weight (kg)	Part #
A	B	C	D	E		
1/2 -13	3.94	3.15	2.60	2.17	0.22	21-420
5/8-11	3.94	3.94	2.60	2.91	0.27	21-421

Knuckle Foot



**21-008
 21-009
 21-012
 21-401
 21-402
 21-403**



Application

Adjustable height leveling foot for heavy and medium structures such as machine bases and assembly tables.

For 1" Series, a base plate must be used. See page 172.

Technical Data

Base - Glass-filled nylon (Black)
 Spindle, nut & disk – Steel, Galvanized
 Self-aligning leveling adjustment has a maximum tilt of 15° via ball and socket.

Ordering Information

Profile Series	Dimensions					Max Load N (lbs)	Weight (g)	Part #
	A	B	C	Dmin	Dmax			
40	M8	60	39	32	50	1500 (337)	37	21-008
	M8	80	39	32	65	1500 (337)	43	21-009
	M10	80	39	34	65	1500 (337)	66	21-012
28/30	M8	70	29	30	58	3000 (674)	20	21-010
1.5"	5/16-18	2.40"	1.50"	1.31"	2.00"	1500 (337)	36	21-401
	5/16-18	3.15"	1.50"	1.31"	2.50"	1500 (337)	41	21-402
1"	3/8-16	3.15"	1.50"	1.38"	2.50"	1500 (337)	68	21-403

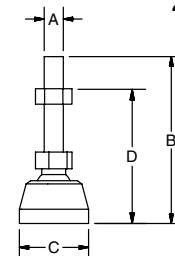
M8 or 5/16-18 thread mounts to end of profiles with machining 19-016.

M10 or 3/8-16 thread mounts to end of 40 Series profiles with machining 19-017.

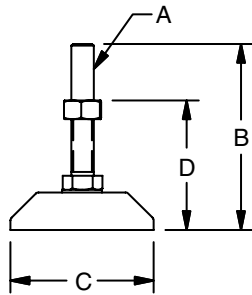
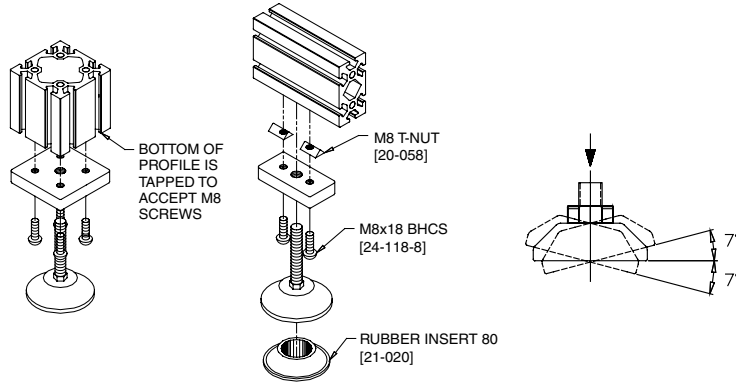
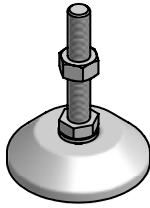
Fastens to T-slot using 30 Series T-nuts.



21-010



Knuckle Foot 80 Knuckle Foot 1.5



Application

Adjustable height leveling foot for heavy duty structures. Require appropriate base plate for mounting.

Technical Data

Base – Zinc Cast
Spindle & Nut - Steel, Galvanized

Ordering Information

Series	A	B	C	Dmin	Dmax	Max Load N (lbs)	Weight (kg)	Part #
40	M12	100	76	41	80	10,000 (2250)	0.29	21-013
	M12	160	76	41	140	10,000 (2250)	0.33	21-014
	M16	100	76	45	80	10,000 (2250)	0.36	21-016
	M16	160	76	45	140	10,000 (2250)	0.44	21-018

Mounts to end of 40 Series profile with M12 or M16 machining 19-014

Series	A	B	C	Dmin	Dmax	Max Load N (lbs)	(kg)	Part #
1.5"	1/2-13	4.00	3.00	1.63	3.15	10,000 (2250)	0.29	21-404
	1/2-13	6.30	3.00	1.63	5.50	10,000 (2250)	0.33	21-405
	5/8-11	4.00	3.00	1.81	3.15	10,000 (2250)	0.36	21-406
	5/8-11	6.30	3.00	1.81	5.50	10,000 (2250)	0.44	21-407

Application

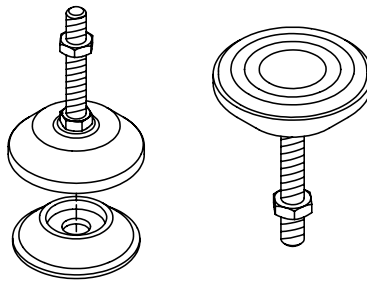
For vibration-dampening and floor protection with the Knuckle Foot 80 or Knuckle Foot 1.5.

Technical Data

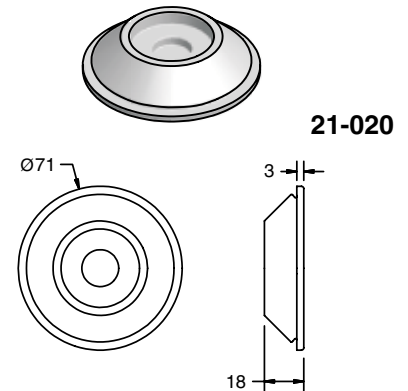
Rubber (Black)
 Hardness 80° Shore A
 Oil and water resistant

Ordering Information

Description	Unit	Weight	Part #
Rubber Insert 80	Each	50 g	21-020



Rubber Insert



Application

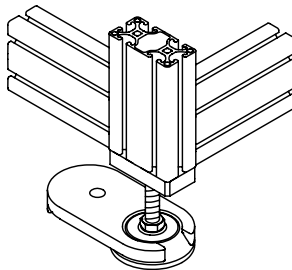
Clamps Knuckle Foot 80 or Knuckle Foot 1.5 to Floor

Technical Data

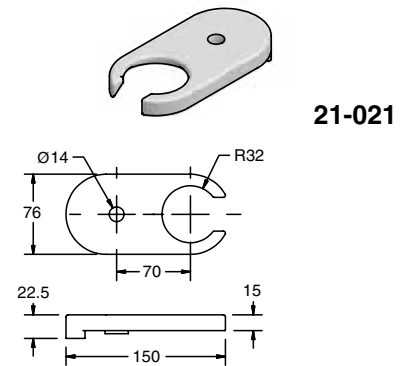
Zinc, Black Powder-coat
 3000 kg Max Load

Ordering Information

Description	Unit	Weight	Part #
Clamping Shoe 80	Each	0.47 kg	21-021
Floor Fastening Set	Each	0.50 kg	21-032



Clamping Shoe



Application

Mounting plate for knuckle feet for leveling structures and/or permanent placement of structures.

Technical Data

Aluminum, Black Finish

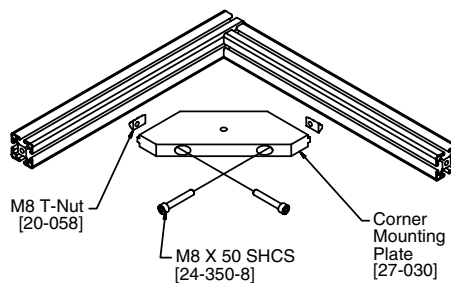
**Recommended Fastening Hardware
 (Sold Separately)**

Series	Screws	T-Nuts	Set
40	(2) 24-350-8	(2) 20-058	21-031M
1.5"	(2) 25-332-5	(2) 25-002	21-031E

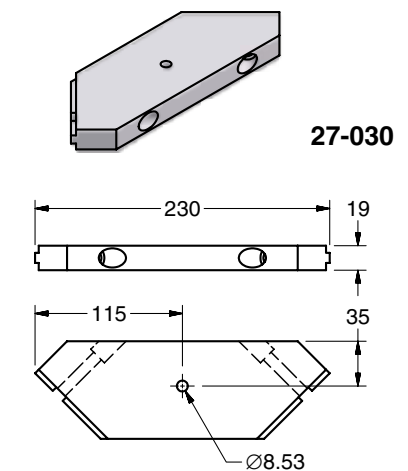
Ordering Information

Series	Description	Unit	Weight	Part #
40/1.5"	Corner Mounting Plate*	Each	0.75 kg	27-030
	Profile Fastening Set (Metric)	Set	60 g	21-031M
	Profile Fastening Set (English)	Set	60 g	21-031E
				19-014

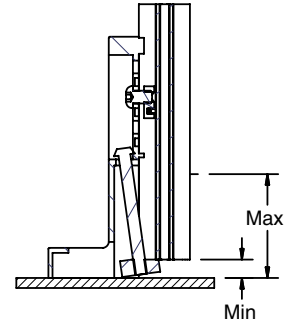
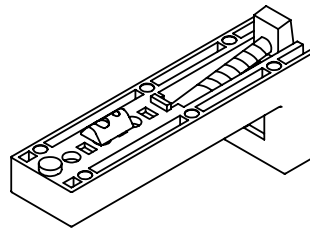
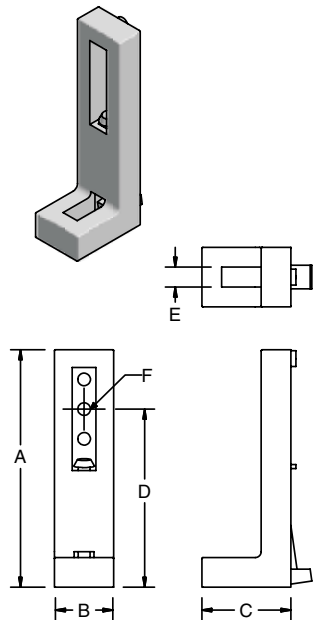
* Requires tap service on Ø8.5mm hole



Corner Mounting Plate



Leveling Foot



Application

Leveling foot for light and heavy duty equipment. Height is adjustable by leveling screw, which is accessed from the top.

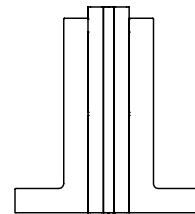
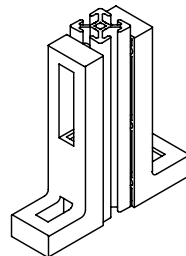
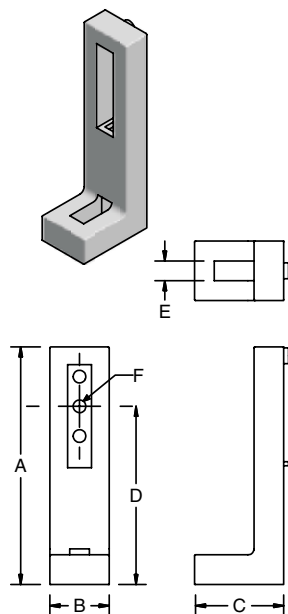
Technical Data

21-022
Base – Zinc Cast, Black Powdercoat
Max Vertical Load – 10,000N (2,250 lbs)
All fastening hardware to attach to profile is included.

Ordering Information

Profile Series	Dimensions						Adjustment		Wt. (kg)	Part #
	A	B	C	D	E	F	Min	Max		
40	160	40	60	120	10	8.3	10	75	0.28	21-022
30	120	30	45	81	10	8.3	8.5	31	0.22	21-022-30
28	120	30	45	81	10	6.4	8.5	31	0.22	21-022-28
1.5"	6.30"	1.57"	0.36"	4.72"	0.394"	0.331"	0.394"	2.00"	0.28	21-415
1"	4.72"	1.18"	1.77"	3.19"	0.394"	0.252"	0.335"	1.125"	0.22	21-416

Floor Anchor



Application

For attachment of light equipment to floors or mounting surface

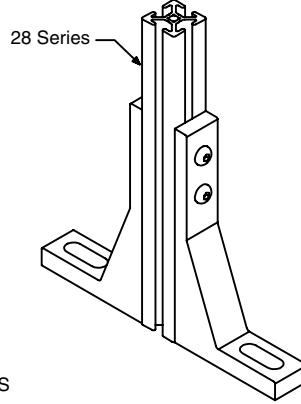
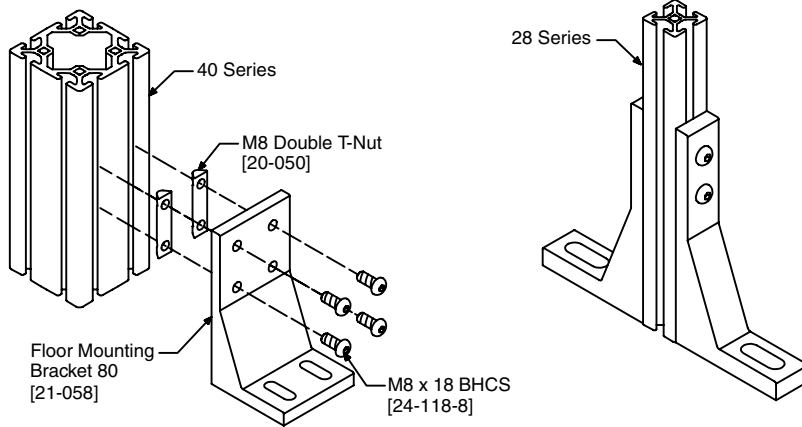
All fastening hardware to attach to profile is included.

Technical Data

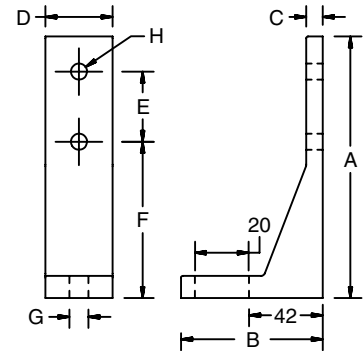
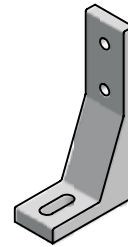
Zinc Cast, Black Powdercoat
Includes all fastening hardware.

Ordering Information

Profile Series	Dimensions						Weight (kg)	Part #
	A	B	C	D	E	F		
40	160	40	60	120	10	8.3	0.28	21-023
30	120	30	45	81	10	8.3	0.22	21-023-30
28	120	30	45	81	10	6.4	0.22	21-023-28
1.5"	6.30"	1.57"	2.36"	4.72"	0.394"	0.331"	0.28	21-060
1"	4.72"	1.18"	1.77"	3.19"	0.394"	0.252"	0.22	21-061



Floor Mounting Brackets



27-057
27-059

Application

Economical bracket for mounting structures to floor or mounting surface

Technical Data

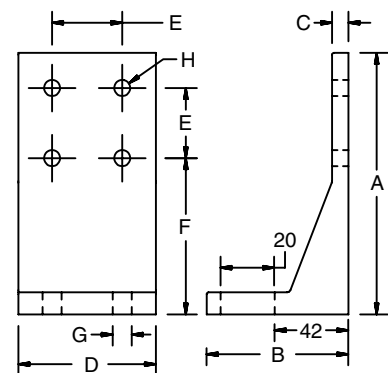
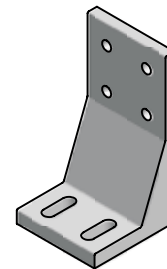
Aluminum, Clear Anodized
 Metric series hole dia. is 8.8mm.
 Inch series hole dia. is 0.28".

Recommended Hardware

Series	Screws	T-Nuts	Double T-Nuts*
40	24-118-8	20-058	20-050
30	24-118-8	20-058	20-050
28	24-116-8	20-057 or 20-091	—
1.5"	25-112-5	25-002, 20-082 or 20-182	25-041 or 25-046
1"	25-110-4	25-031 or 25-034	—

Ordering Information

Series	A	B	C	D	E	F	G	∅H	Wt. (kg)	Part #
40, 1.5"	142	77	9	38	40	82	10	10	0.28	27-057
	142	77	9	76	40	82	10	10	0.57	27-058
30/28, 1"	142	77	9	28	28 25.4	82	10	9 7	0.19	27-059
	142	77	9	50.8	28 25.4	82	10	9 7	0.35	27-060



27-058
27-060

Economy Floor Mounting Brackets

Application

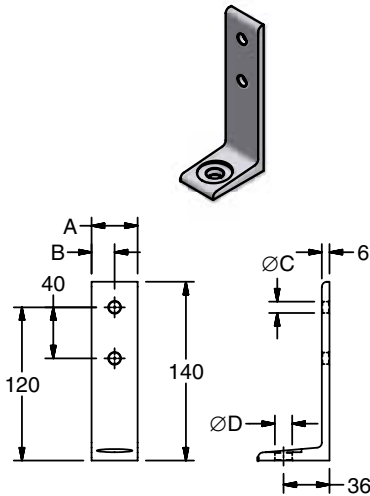
Economical light duty floor mounting brackets for 20, 30, 40, 1" and 1.5" Series profiles. Securely mounts structures to floor or mounting surface.

Technical Data

Aluminum, Anodized

Recommended Hardware

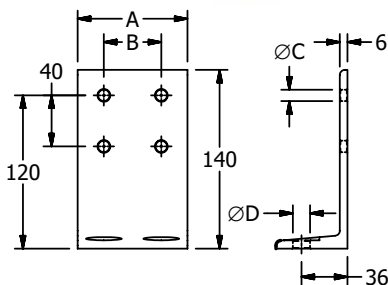
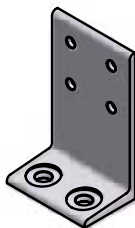
Series	Screws	T-Nuts
40	24-116-8	20-058 or 20-081
30	24-114-6	20-056 or 20-090
20	24-112-5	20-045 or 20-085
1.5"	25-112-5	25-002 or 20-082
1"	25-108-4	25-031 or 25-034



- 28-501
- 28-502
- 28-503
- 28-504
- 28-505

Ordering Information

Profile	Style	A	B	ØC	ØD	Weight	Part #
40	Single	36.0	18.0	9.0	13.5	115 g	28-505
	Double	76.0	40.0	9.0	13.5	245 g	28-510
30	Single	27.0	13.5	7.0	11.0	87 g	28-503
	Double	57.0	30.0	7.0	11.0	185 g	28-508
20	Single	18.0	9.0	5.5	9.0	60 g	28-501
	Double	38.0	20.0	5.5	9.0	125 g	28-506
1.5"	Single	34.0	17.0	9.0	13.5	108 g	28-504
	Double	72.0	38.0	9.0	13.5	230 g	28-509
1"	Single	23.0	11.5	7.0	9.0	75 g	28-502
	Double	48.0	25.1	7.0	9.0	156 g	28-507



- 28-506
- 28-507
- 28-508
- 28-509
- 28-510

Application

Heavy duty flange foot for attaching structures to floor. Tapped holes in base can be used for leveling.

Universal Flange Feet are machined to accommodate both the 40 and 1.5" Series profiles only.

Technical Data

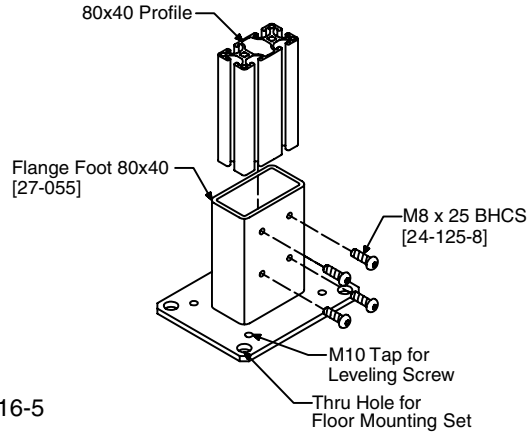
Steel, Black Finish

Order Hardware Separately

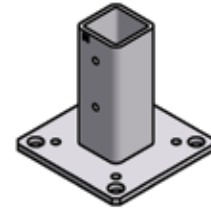
For clamping Profile use 24-125-8 or 25-116-5

For Leveling use 24-525-10F

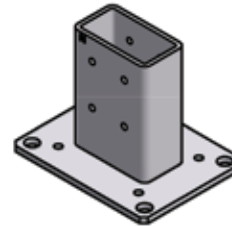
Floor Fastening Set 21-032 includes wedge anchor, washer and hex nut.



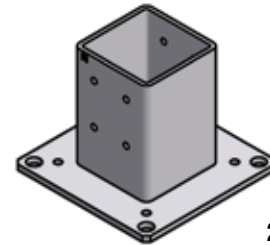
Flange Feet



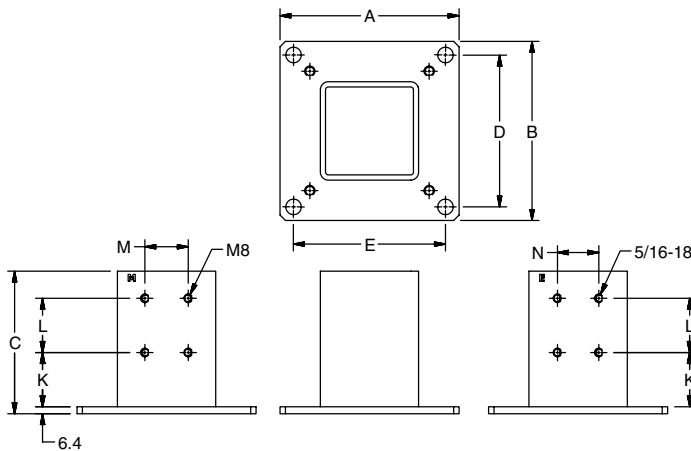
27-050



27-055



27-056



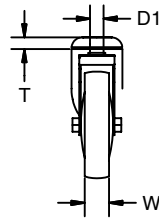
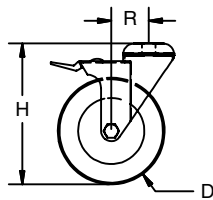
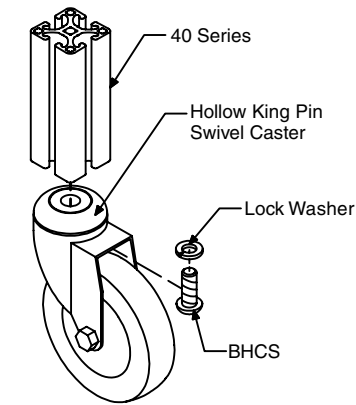
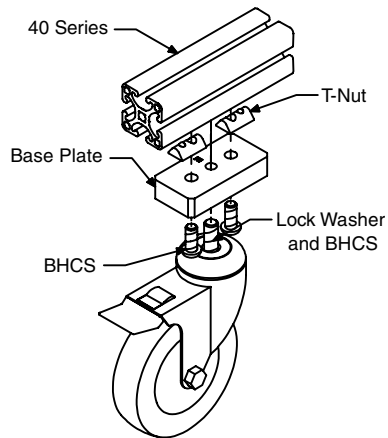
Ordering Information

Profile Size	Dimensions (mm)										Weight (kg)	Part #
	A	B	C	D	E	F	K	L	M	N		
40 x 40 1.5" x 1.5"	125	125	128	100	100	14.3	50	50	—	—	1.55	27-050
80 x 40 3" x 1.5"	165	127	125	100	140	14.3	50	50	40	38.1	2.19	27-055
80 x 80 3" x 3"	165	165	125	140	140	14.3	25	50	40	38.1	2.79	27-056

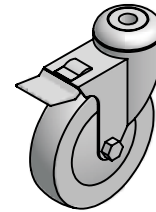
Caster Quick Reference

Type		Load Capacity kg (lbs)	Wheel	Wheel Dia. (mm)	Wheel Width (mm)	Total Height (mm)	Wheel Center	Weight (kg)	Part #
Hollow King Pin	Swivel	40 (88)	Rubber Grey Non-Marking	50	19	68	Pressed Steel	0.21	21-300
	Swivel	40 (88)	Rubber Grey Non-Marking	50	19	68	Pressed Steel	0.24	21-301
	Swivel	80 (175)	Neoprene Rubber, Black	75	25	100	Pressed Steel	0.39	21-310
Threaded Stem	Swivel	91 (200)	Hard Rubber	125	32	162	Solid Rubber	1.04	21-314
	Swivel	91 (200)	Hard Rubber	125	32	162	Solid Rubber	1.2	21-315
	Leveling	600 (set of 4)	Nylon	50	18	82	Pressed Steel	0.8	21-323
	Leveling	1200 (set of 4)	Nylon	62	30	102	Pressed Steel	1.2	21-327
Top Plate	Swivel	102 (225)	Grey Poly	76	32	112	Pressed Steel	0.71	21-303
	Swivel	102 (225)	Grey Poly	76	32	112	Pressed Steel	0.88	21-304
	Rigid	102 (225)	Antistatic Grey	76	31	119	Pressed Steel	0.3	21-302
	Rigid	136 (300)	Hard Rubber Grey	127	32	165	Solid Rubber	0.92	21-311
	Swivel	136 (300)	Blue Grey Rubber	125	32	165	Pressed Steel	1.14	21-312
	Swivel	136 (300)	Blue Grey Rubber	125	32	165	Pressed Steel	1.29	21-313
	Swivel	410 (900)	Purple Poly	152	51	191	Pressed Steel	2.2	21-318
	Swivel	410 (900)	Purple Poly	152	51	191	Pressed Steel	2.6	21-319
	Leveler	600 (set of 4)	Nylon	50	18	82	Pressed Steel	0.8	21-324
	Leveler	1200 (set of 4)	Nylon	62	30	102	Pressed Steel	1.2	21-328
	Floor	182 (400)	Vulcanized Rubber Pad	—	—	165 ret. 196 ext.	Pressed Steel	2.1	21-325

Hollow King Pin



Swivel



Swivel w/Brake

Application

Casters designed for light and medium duty applications with ratings up to 91kg (200lbs). Mounting surface is a hollow king pin with ball bearing swivel.

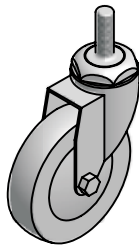
Technical Data

Housing: Pressed Steel, Zinc Chromated.

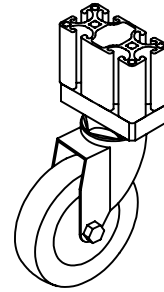
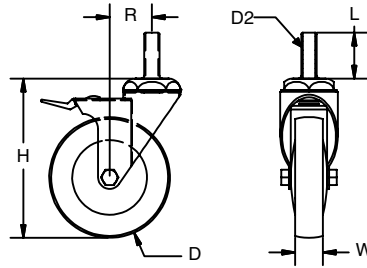
Ordering Information

Load Cap. kg (lbs)	Wheel	Dimensions (mm)						Locking	Weight (kg)	Part #
		D	W	H	R	T	D1			
40 (88)	Rubber Black Non-Marking	50 (2")	19	68	50	7.8	10.2	None	0.21	21-300
40 (88)	Rubber Black Non-Marking	50 (2")	19	68	70	7.8	10.2	Wheel	0.24	21-301
80 (175)	Neoprene Rubber, Black	75 (3")	25	100	100	7.8	10.2	Total Lock	0.39	21-310

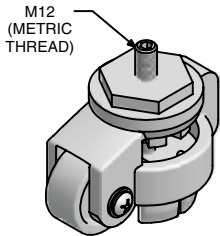
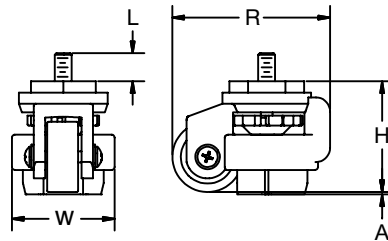
Threaded Casters



Swivel



Swivel w/Brake



Leveling

Application

Casters designed light to heavy loads. A wrench fits easily on the swivel to allow installation to a base plate. 21-323 and 21-327 are leveling casters with adjustable pad.

Technical Data

Housing: Pressed Steel, Ball Bearing Swivel Head.
Order hardware and base plates separately

Ordering Information

Load Cap kg (lbs)	Wheel	Dimensions (mm)						Wheel Center	Lock	Wt. (kg)	Part #
		W	D	H	R	D2	L				
91 (200)	Hard Rubber	32	125 (5")	162	106	M10	38	Pressed Steel	None	1.04	21-314
91 (200)	Hard Rubber	32	125 (5")	162	106	M10	38	Pressed Steel	Total Lock	1.20	21-315
272 (600)*	Nylon	73	50 (2")	82	104	M12	19	Pressed Steel	Leveler	0.80	21-323
545 (1200)*	Nylon	88	62 (2.5")	102	128	M12	19	Pressed Steel	Leveler	1.20	21-327

* Set of 4

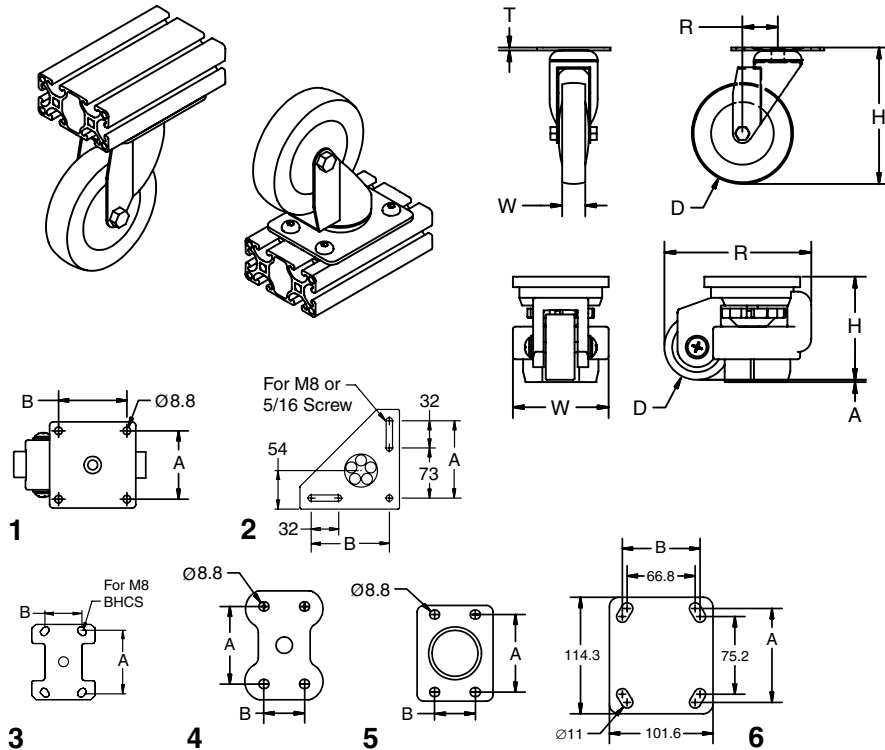
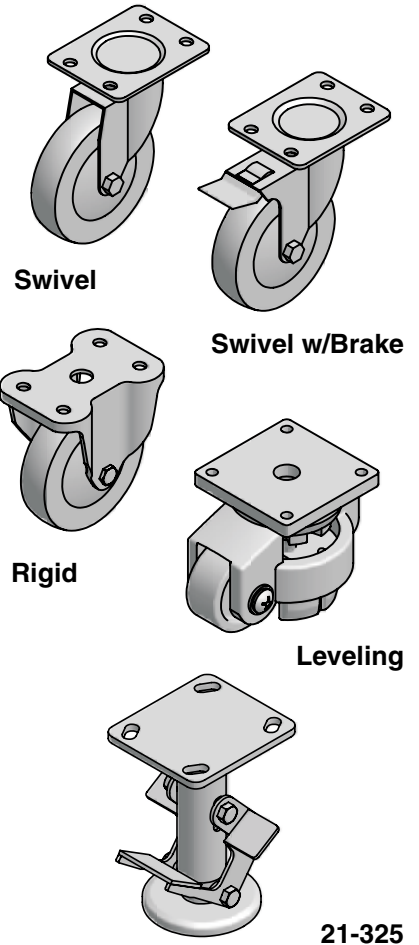


Plate Type Casters



Application

Top plate casters are great for all types of loads and applications. The caster bolts directly to the appropriate extrusion T-Slot or the end of a profile using an adapter.

Technical Data

Housing: Pressed Steel, Ball Bearing Swivel Head.

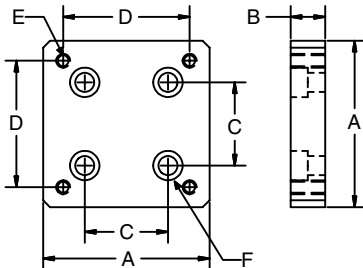
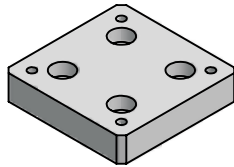
Order hardware and base plates separately. Locking foot 21-325 requires adapter plate 21-335.

Ordering Information

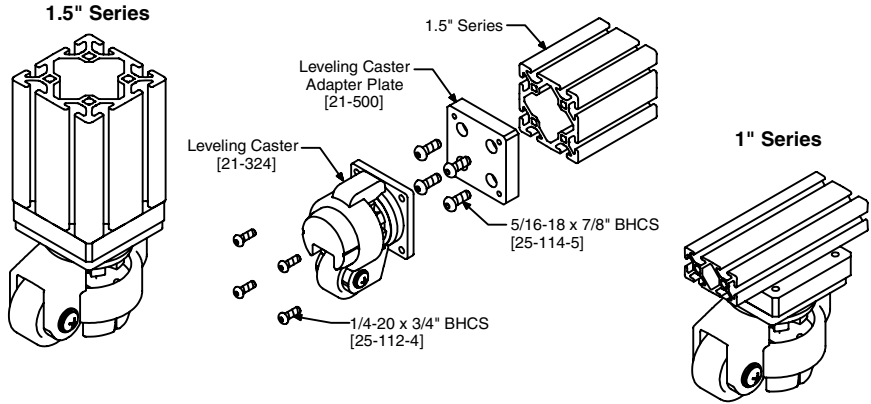
Type	Lock	Load Cap. kg (lbs)	Wheel	Dimensions (mm)							Wt. (kg)	Plate Dwg.	Part #
				D	W	H	R	T	A	B			
Swivel	None	102 (225)	Grey Poly	76 (3")	32	112	80	9.4	75	40	0.71	5	21-303
Swivel	Total	102 (225)	Grey Poly	76 (3")	32	112	106	9.4	75	40	0.88	5	21-304
Rigid	None	102 (225)	Antistatic Grey	76 (3")	31	119	-	3	75	40	0.30	4	21-302
Rigid	None	136 (300)	Blue Grey Rubber	125 (5")	32	165	-	3	75	40	0.92	4	21-311
Swivel	None	136 (300)	Blue Grey Rubber	125 (5")	32	165	106	2.5	75	40	1.14	5	21-312
Swivel	Total Lock	136 (300)	Blue Grey Rubber	125 (5")	32	165	106	2.5	75	40	1.29	5	21-313
Swivel	None	410 (900)	Purple Poly	152 (6")	51	191	125	11.5	76-92	67-76	2.20	5	21-318
Swivel	Total Lock	410 (900)	Purple Poly	152 (6")	51	191	180	11.5	76-92	67-76	2.60	5	21-319
Leveler	Foot	600 (Set of 4)	Nylon	50 (2")	73	82	104	6.25	58	58	0.80	1	21-324*
Leveler	Foot	1200 (Set of 4)	Nylon	62 (2.5")	89	102	128	7.25	70	70	1.20	1	21-328*
Foot	Locking	182 (400)	Rubber Pad	-	-	197	-	-	92	67	2.14	6	21-325

* Requires special mounting plate. Adapter plates for inch profiles on page 172. Consult factory for engineering assistance for metric profile adapter plates.

Adapter Plates



- 21-500
- 21-501
- 21-502
- 21-504



Application

Used to mount heavy duty casters or floor locks to either the end of the extrusion or T-slots.

Technical Data

Aluminum, Clear Anodized

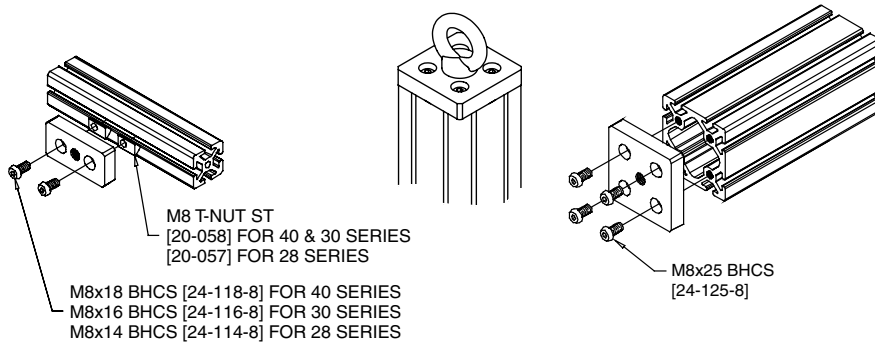
Recommended Fastening Hardware (Order Separately)

Mounting Method	Screws	T-Nuts
End of Extrusion	25-114-5	—
T-Slot	25-112-5	25-002 or 25-051

Ordering Information

Caster	A	B	C	D	E	F	(kg)	Part #
21-324	3.0"	0.625"	1.5"	2.28"	1/4-20	for 5/16	0.64	21-500
	3.0"	0.625"	1.0"	2.28"	1/4-20	for 1/4	0.65	21-501
21-328	3.5"	0.625"	1.5"	2.76"	1/4-20	for 5/16	0.75	21-502
21-504	4.50"	0.63"	1.5"	3.00"	3/8-16	for 5/16	0.85	21-504

Base Plates

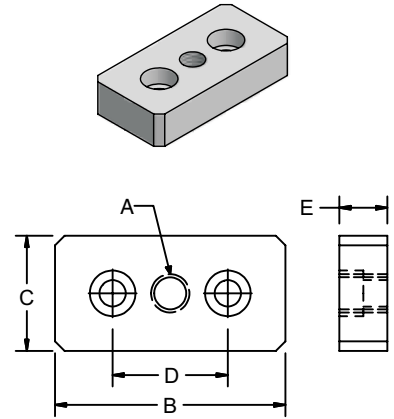


Application

Base plates are used primarily to mount leveling feet and casters on the end or side of an extrusion. These plates can also be used for mounting other parts such as lifting eyes.

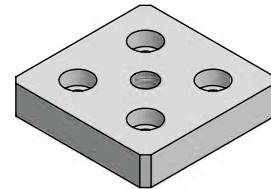
Technical Data

Aluminum, Clear Anodized



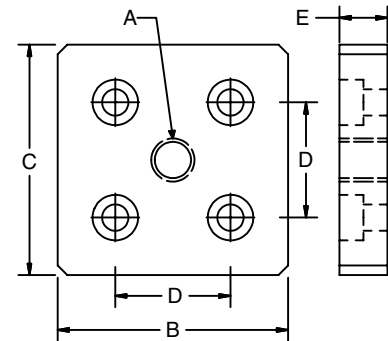
Recommended Hardware

Mounting	Series	Screws	T-Nuts	Machining
Attached to Profile End	30/28	24-125-8	—	19-010
	20	24-114-5	—	19-010
	1"	25-112-4	—	19-009
Attaching to T-Slot	30	24-116-8	20-058	—
	28	24-114-8	20-057	—
	20	24-112-5	20-045 or 20-085	—
	1"	25-110-4	25-031, 25-034 or 25-036	—

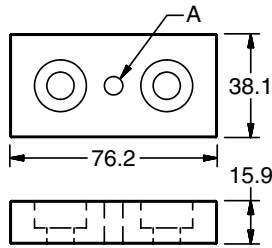
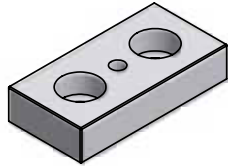


Ordering Information

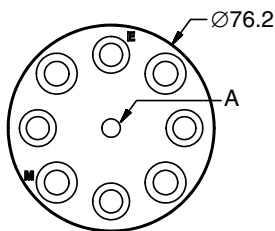
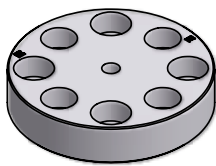
Profile Series	Dimensions					Weight (kg)	Part #
	A	B	C	D	E		
30	M8	60	30	30	15.9	0.24	21-029-8
	M10	60	30	30	15.9	0.24	21-029-10
	M12	60	30	30	15.9	0.24	21-029-12
28	M8	54	25.4	28	15.9	0.15	21-004
	M10	54	25.4	28	15.9	0.15	21-005
	M12	54	25.4	28	15.9	0.15	21-006
	M8	54	54	28	15.9	0.30	21-204
	M10	54	54	28	15.9	0.30	21-205
	M12	54	54	28	15.9	0.30	21-206
20	M8	40	40	20	12	0.81	21-220-8
	M10	40	40	20	12	0.81	21-220-10
	M12	40	40	20	12	0.81	21-220-12
1"	1/4-20	2.0"	1.0"	1.0"	0.625"	0.15	21-1020-04
	5/16-18	2.0"	1.0"	1.0"	0.625"	0.15	21-1020-05
	5/16-18	2.0"	2.0"	1.0"	0.625"	0.24	21-2020-05
	3/8-16	2.0"	2.0"	1.0"	0.625"	0.24	21-2020-06
	1/2-13	2.0"	2.0"	1.0"	0.625"	0.24	21-2020-08



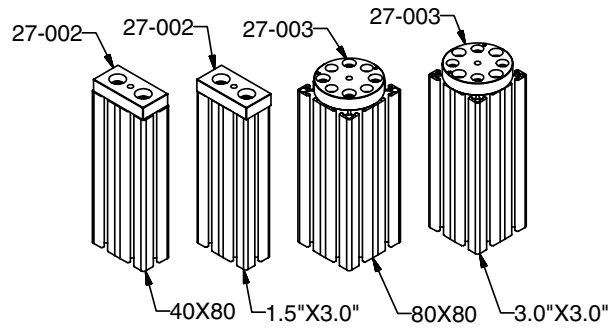
Base Plates (SMART)



27-002-xxx



27-003-xxx



Application

SMART base plates are used primarily to mount leveling feet and casters on the end or side of an extrusion. These plates can also be used for mounting other parts such as lifting eyes.

The SMART base plates adapt to both 40 and 1.5" Series extrusions.

Technical Data

Aluminum, Clear Anodized

Recommended Hardware

Mounting	Series	Screws	T-Nuts	Machining
Attached to Profile End	1.5"	25-114-5	—	19-010
	40	24-125-8	—	19-010
Attaching to T-Slot	1.5"	25-112-5	25-002, 20-082 or 20-182	—
	40	24-118-8	20-058, 20-081 or 20-181	—

Ordering Information

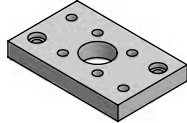
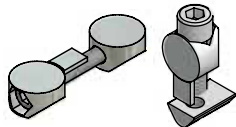
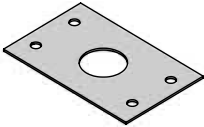
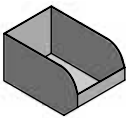

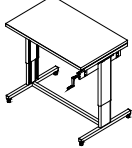
27-002- **M08**

Code	A Thread
M08	M8
M10	M10
M12	M12
M16	M16
M20	M20
E05	5/16-18
E06	3/8-16
E08	1/2-13
E10	5/8-11

27-003- **M08**

Code	A Thread
M08	M8
M10	M10
M12	M12
M16	M16
M20	M20
E05	5/16-18
E06	3/8-16
E08	1/2-13
E10	5/8-11

Section 7 Special Applications

Pneumatic Plates Connecting Joining Blank	176 177 178	
Pneumatic Fasteners Universal Butt	178 178	
Pneumatic Seals	179	
Workstation Components Bins Adjustable Bin Mounting Drawers	181 182 183	
Tool Runner	183	
Lift Systems Two-Cylinder Four-Cylinder	184 185	

Pneumatic Profiles

Application

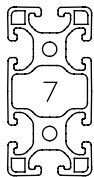
The cavity within a profile can be used to distribute compressed air as well as provide structural foundation for the system application. Connections may be made at any location using the proper accessory component and machining. Many of the profile configurations also provide for multiple channels allowing for the complete distribution of compressed air in complex systems.

Available Profiles

Part #	Description	Available Air Channels	Structural Properties					Weight [kg/m]	Page
			I _x [cm ⁴]	I _y [cm ⁴]	W _x [cm ⁴]	W _y [cm ⁴]	Section [cm ²]		
10-080	Profile 80X40 Standard	1	71.79	17.23	17.99	8.62	11.53	3.18	26
11-080	Profile 80X40 Heavy	1	102.00	26.73	25.50	13.37	16.59	4.58	26
10-088	Profile 80X80 Standard	1	138.30	138.30	34.58	34.58	20.17	5.45	27
11-088	Profile 80X80 Heavy	1	185.20	185.20	46.30	46.30	26.01	7.02	27
10-120	Profile 120X40 Standard	2	220.54	24.22	36.76	12.11	16.12	4.35	28
11-122	Profile 120x80 Heavy	4	575.07	274.46	92.75	68.61	40.08	10.82	27
10-164	Profile 160X40 Standard	3	517.25	33.13	64.65	16.56	21.48	5.80	28
11-140	Profile 160X40 Heavy	3	749.51	54.80	93.60	27.40	32.30	8.72	28
10-160	Profile 160X80 Standard	4	922.50	271.10	115.30	67.80	38.10	10.29	29
11-160	Profile 160X80 Heavy	2	1215.79	357.51	151.97	89.38	51.72	13.96	29

Cavity areas shown are in cm² (1 cm² = 0.155 in²)

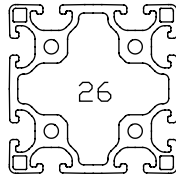
To calculate volume, multiply area by the profile length.



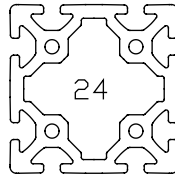
10-080



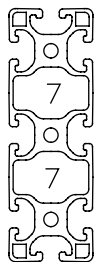
11-080



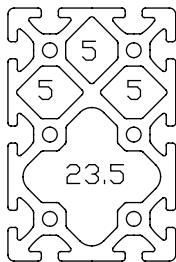
10-088



11-088



10-120



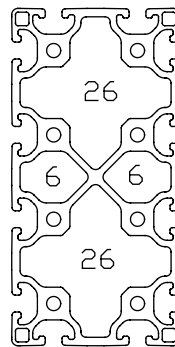
11-122



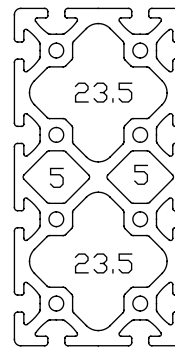
10-164



11-140



10-160



11-160

Pressure Ratings and Leak Test

Safe Maximum Pressure Rating

1725 kPa (250 psi)

Supporting Pressure Rating Data

Procedures

Stage 1

A sample assembly was connected to a nitrogen cylinder. Pressure of 690 kPa (100psi) was applied. The holding button head screws were checked and tightened to a torque of 13.6 Nm (10 ft-lbs). Pressure was increased in stages to 6900 kPa (1000 psi) with continuous inspection for leaks. This was duplicated for each profile.

Stage 2

A sample was filled with water and pressure was applied in the same manner as in stage 1. Pressure was increased until a gaskets leaked or profiles burst. This was duplicated for each profile.

Sample Testing Results

Profile	Pressure Medium	Pressure kPA (psi)	Observation
10-080	Nitrogen	6,900 (1000)	No Leakage
	Water	9,655 (1400)	Profile Burst
10-088	Nitrogen	6,900 (1000)	No Leakage
	Water	9,655 (1400)	Profile Burst
11-080	Nitrogen	6,900 (1000)	No Leakage
	Water	27,580 (4000)	No Leakage
11-088	Nitrogen	6,900 (1000)	No Leakage
	Water	10,345 (1500)	Gasket Leaked

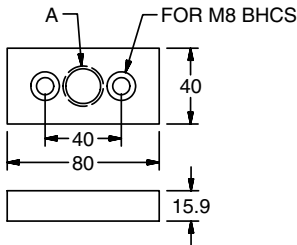
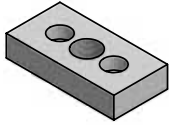
Connecting Plates

Application

Connecting plates provide threaded NPT ports and align with air chambers within properly machined profiles. Both styles are designed to be attached to the end face of the profile. The 80x80 plate can also be attached to the T-slotted side of a profile with an 80mm dimension. All plates include the appropriate sealing gasket. These plates can be used to seal end of profile by using appropriate plug.

Technical Data

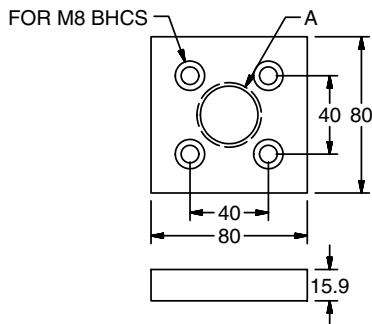
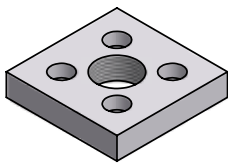
Plate: Aluminum, Anodized
 Seal: Neoprene or Buna



21-040zX

Recommended Fasteners

Mounting	Hardware	21-040zX	21-043zX
End Face Mount	Screw	(2) 24-125-8	(4) 24-125-8
Side Mount	Screw	—	(4) 24-118-8
	T-Nut	—	(4) 20-058

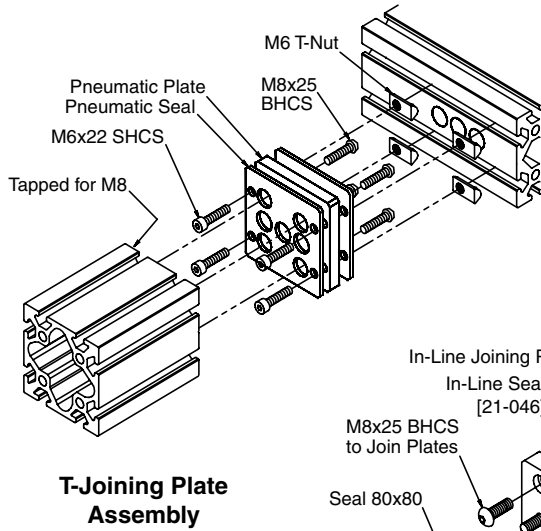


21-043zX

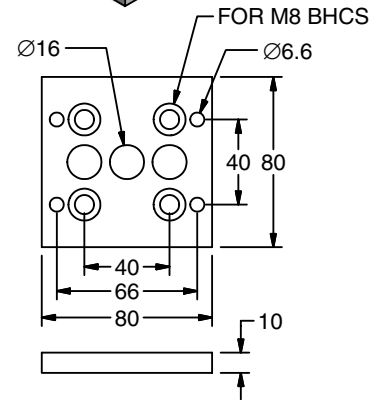
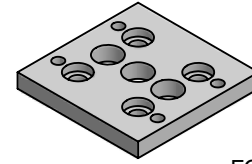
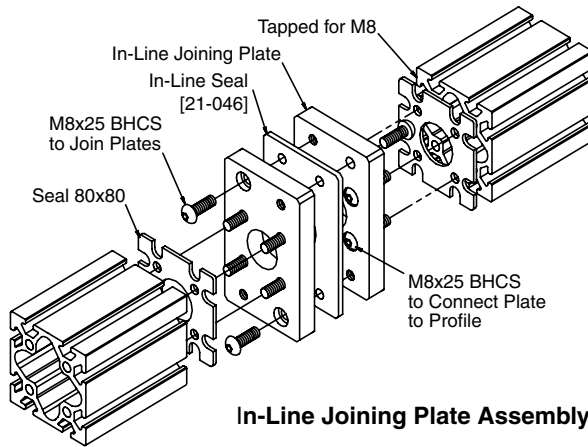
Ordering Information

Description	A	Unit	Weight	Part #
Connector Plate 80x40	1/8"-27 NPT	1 Set	0.11 kg	21-040z1
	1/4"-18 NPT	1 Set	0.11 kg	21-040z2
	3/8"-18 NPT	1 Set	0.11 kg	21-040z4
	1/4" BSPP	1 Set	0.11 kg	21-040z6
	1/2"-14 NPT	1 Set	0.11 kg	21-040z8
Connector Plate 80x80	1/2"-14 NPT	1 Set	0.23 kg	21-043z2
	1/2" BSPP	1 Set	0.23 kg	21-043z6
	1"-11.5 NPT	1 Set	0.23 kg	21-043z8

Joining Plates



Assembly note for 21-044: M6 SHCS must be inserted head first into T-slot of 80x80 profile BEFORE attachment of plate to end.



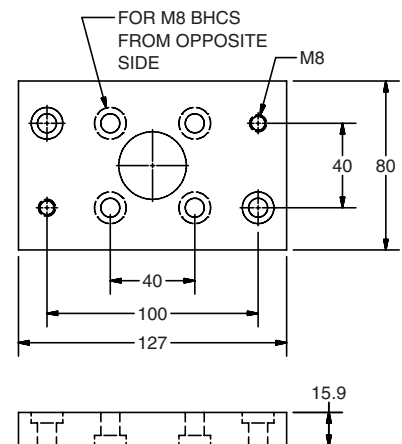
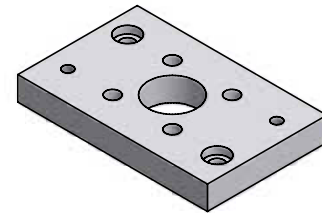
21-044

Application

Joining Plates are used to join two profiles together while extending the compressed air cavity across the joint. These plates are available in in-line as well as "T" configurations. In-Line connections couple the end face of two profiles into a continuous straight section. "T" plates allow a profile to extend at a 90° angle. All Joining Plates come with the necessary seals for the intended application.

Technical Data

21-044: Steel, Galvanized
 21-045: Aluminum, Clear Anodized



21-045

Recommended Fasteners

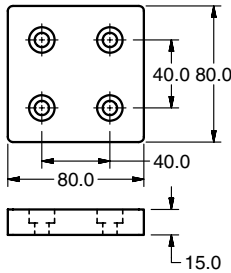
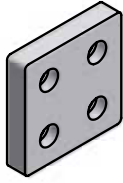
Mounting	Screws	T-Nuts
"T" Connection (21-044)	(4) 24-125-8 (4) 24-322-6	(4) 20-058
In-Line (21-045)	(12) 24-125-8	—

Ordering Information

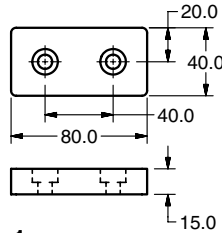
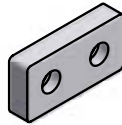
Description	Unit	Weight	Part #
T-Joining Plate	1 Set	0.42 kg	21-044
In-Line Joining Plate	1 Set	1.09 kg	21-045



Blank Plates



21-8000z1



21-4000z1

Application

Used for closing 80x40 and 80x80 profile ends.

Technical Data

Aluminum, Clear Anodized

Recommended Fasteners (Order Separately)

Screws: 24-125-8

Ordering Information

Description

Blank Plate 80x40
Blank Plate 80x80

Unit

Each
Each

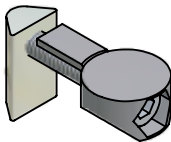
Weight

0.1 kg
0.2 kg

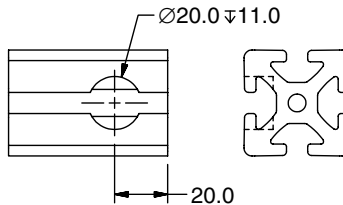
Part

21-4000z1
21-8000z1

Pneumatic Fasteners



20-011

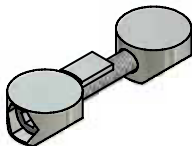


Application

Two styles for connecting 80x40 or larger profiles together when used as compressed air piping. Universal is used on 90° connections. Butt-Fastening is for end to end connections

Technical Data

Zinc Cast, Galvanized



20-012

Ordering Information

Description

Pneumatic Universal Fastening Set
Butt-Fastening Set M6

Unit

Each
Each

Weight

36 g
45 g

Part

20-011
20-012

Pneumatic Seals

Application

Replacement seals for pneumatic connections.

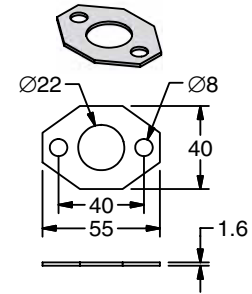
Technical Data

Neoprene or Buna, Black

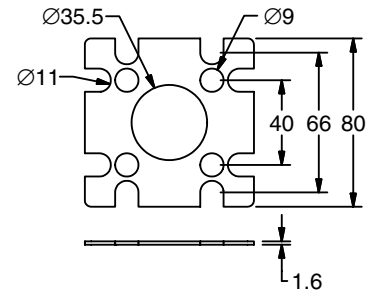
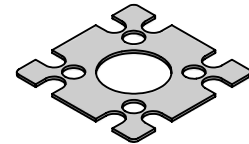
Note: Seals should be retightened after 24 hours of initial installation.

Ordering Information

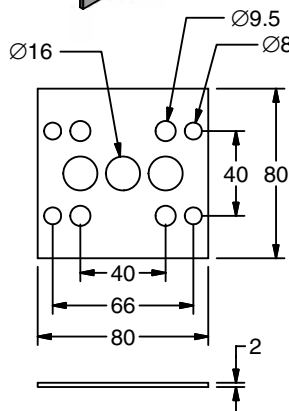
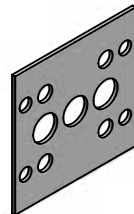
Description	Unit	Part #
Seal 80x40	Each	21-041
Seal 80x80	Each	21-042
Seal 80x80 T-Joining Plate	Each	21-144
Seal 80x80 In-Line Plate	Each	21-046



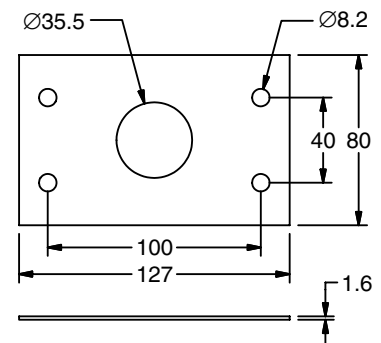
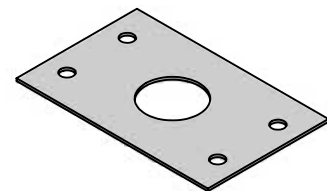
21-041



21-042



21-144



21-046

Complete Workstations



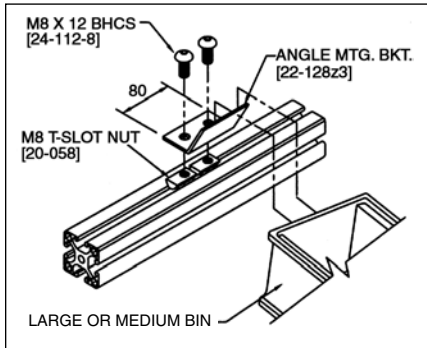
Modular designed workstations by IPS offer a wide range of options and accessory combinations. All structural profiles used in our workstations are made of high strength aluminum, combined with our unique fastening system which provides exceptional flexibility in design for a wide range of applications. All profiles are clear anodized with several available in black. Special colors and coatings are available on request.

T-Slots provide easy attachment points for accessories. Closed face profiles are also available for applications requiring aesthetically clean looks or reduction in the potential for dust and contamination.

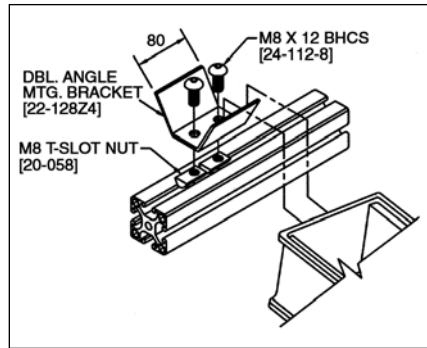
All workstations can be customized for your exact needs. From the heaviest assembly tables to ergonomic LEAN work cells, we have the products and expertise to meet your specifications.



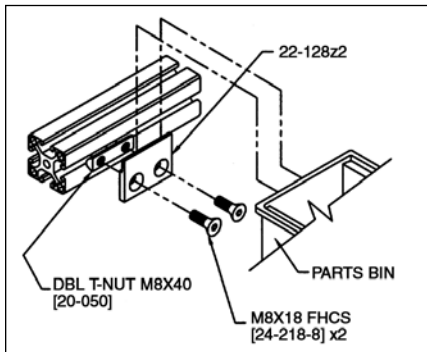
Parts Bin



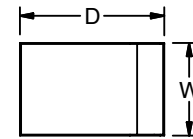
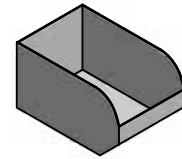
1



2



3



22-126 thru 22-129

Application

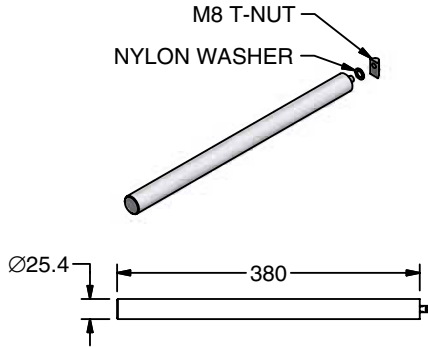
Bins for small to large parts and equipment on work benches, work stations, parts racks, etc. Minimizes parts handling.

Order all hardware separately

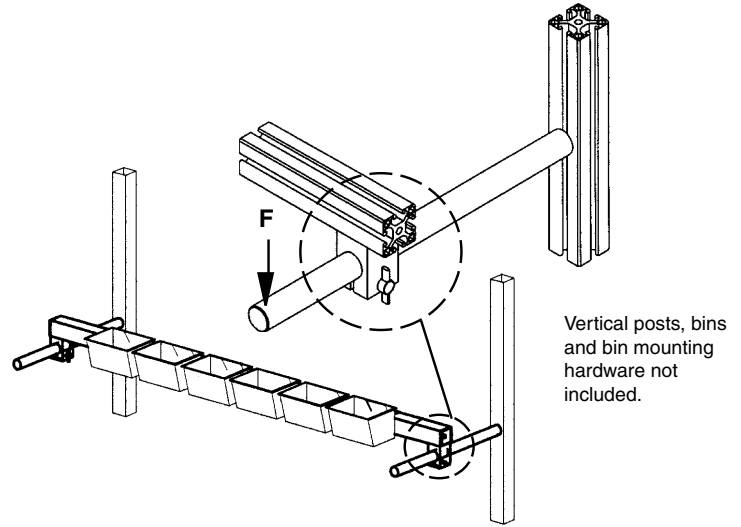
Ordering Information

Description	Dimensions			Mounting Hardware	Material	Weight (kg)	Part #
	W	D	H				
Parts Bins	140	280	127	See fig. 1-3 for mounting choices	Heavy duty polypropylene, red	0.67	22-126
	280	280	127	See fig. 1-3 for mounting choices		1.24	22-127
	105	135	76	See fig. 1-3 for mounting choices		0.08	22-128
	105	187	76	See fig. 1-3 for mounting choices		0.11	22-129
Flat Mounting Bracket	60	6.4	25.4	Not included (See fig. 3)	Al, anodized	0.02	22-128Z2
Angled Mounting Bracket	80	47	30	Not included (See fig. 1)	Al, anodized	0.08	22-128Z3
DbI Ang. Mounting Bracket	80	74	30	Not included (See fig. 2)	Al, anodized	0.07	22-128Z4

Adjustable Bin Mounting Components



22-130



Application

Adjustable bin mounting system for 40 Series work stations and assembly lines. Allows shelf adjustment in two directions: up-down and in-out. 40 series profile can be used as brace for bins at any required horizontal length.

Bins and bin mounting hardware must be ordered separately.

Technical Data

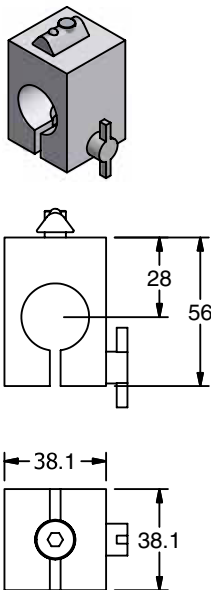
Slide Rail: Al, clear anodized

Slide Collar: Delrin, black

Includes all hardware as shown.

Max. load $F = 60 \text{ N}$ (13.5 lbs)

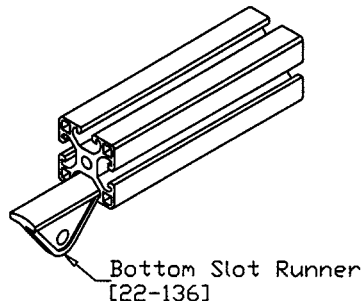
Mounting Brace includes: profile and two end caps.



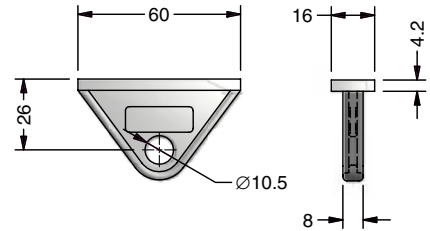
22-134

Ordering Information

Description	Unit	Weight	Part #
Bin Mounting Slide Rail (2 req.)	1 set	0.53 kg	22-130
Slide Collar (2 req.)	1 set	81 g	22-134



Tool Runner



22-136

Application

To suspend and position tools at work stations. Runner slides in 40 series profile.

Technical Data

Runner: glass-filled nylon, black

Max. load 100 N (23 lbs)

Runner Stop can be created by using:

- (1) Flat Point Set Screw [24-516-5F]
- (1) M5 Z-Nut [20-035]

Ordering Information

Description	Unit	Weight	Part #
Runner	1 pc	12 g	22-136

Technical Data

Grey painted steel construction with ball bearing slides and padlock attachment. Stackable.

Order all hardware separately

For mounting to 40 series profile:

Screws	24-118-8
T-nuts	20-058
Flat Washers	24-700-8

Ordering Information

Description (W x D x H)

Drawer 400 x 508 x 172mm

Drawer 400 x 508 x 343mm

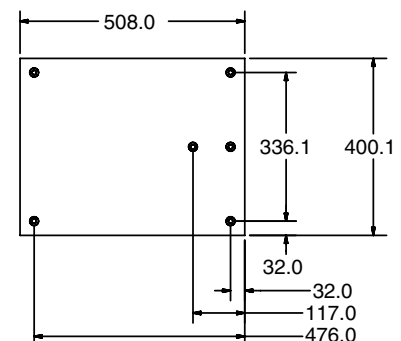
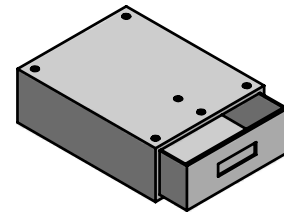
* Contact factory for additional details

Part

22-121

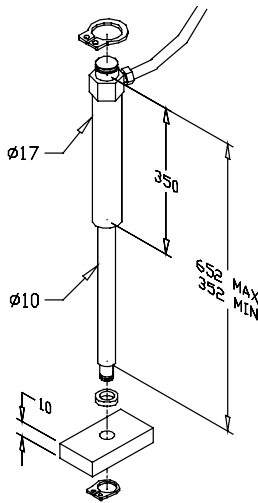
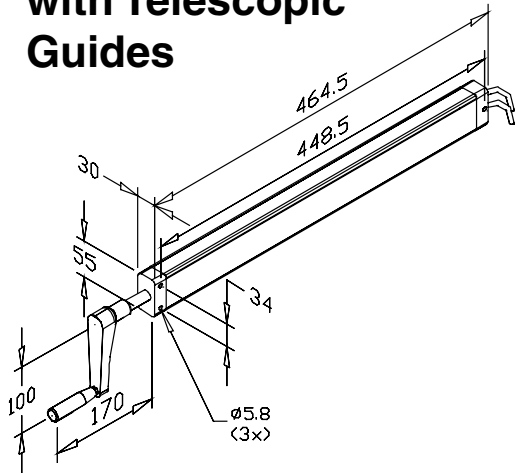
22-122

Drawer

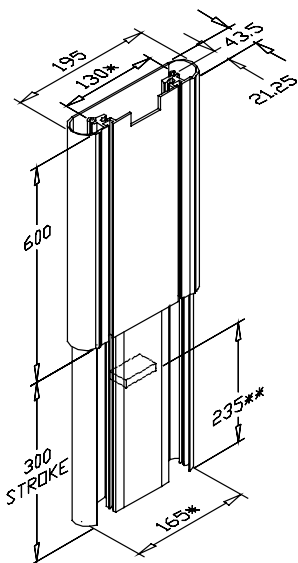


22-121

2-Cylinder Lift System with Telescopic Guides

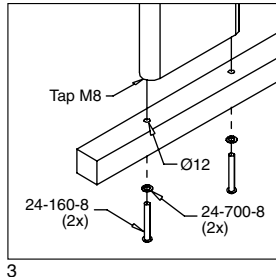
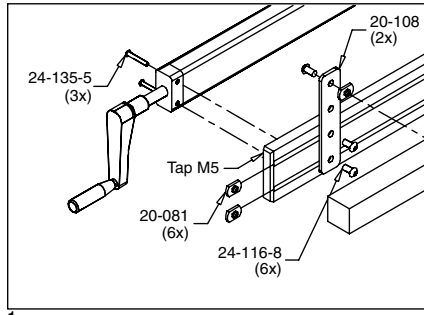


50-702



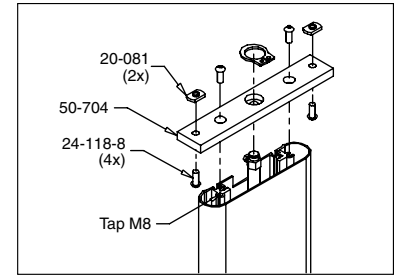
* Distance between mounting holes
** Cylinder mounting distance

50-703

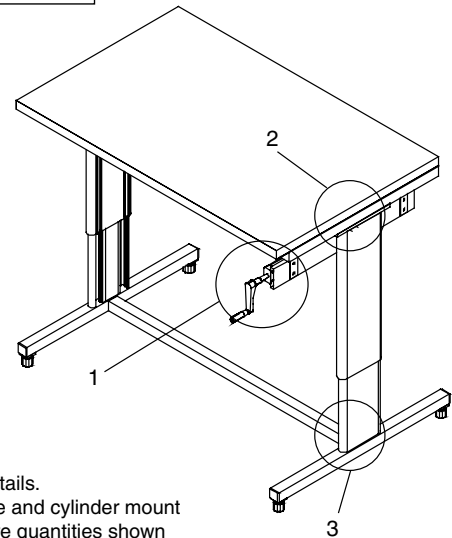


1, 2, 3

Pump mount details.
Telescopic guide and cylinder mount details (hardware quantities shown per side).



2



Application

2-Cylinder Lift System together with Telescopic Guides create a compact versatile height adjustment mechanism. The system consists of two fluid-drive cylinders connected by flexible tubing to a manual pump with a unique "fold-away" hand crank. Due to cylinder internal construction, use of telescopic guides is required. Each guide has four mounting holes (two on top, two on bottom) that can be tapped for M8 or 5/16"-18.

Order mounting hardware for pump and telescopic guides separately (see application illustration).

Ordering Information

Description	Unit	Weight	Part #
2-Cylinder Lift System	1 set		50-702
Telescopic Guide (2 required)	1 pc	4.3 kg	50-703
Mounting Plate for 50-703	1 pc	6 g	50-704

Technical Data

Maximum lift capacity 2224 N (500lbs.)

Adjustment range 300mm

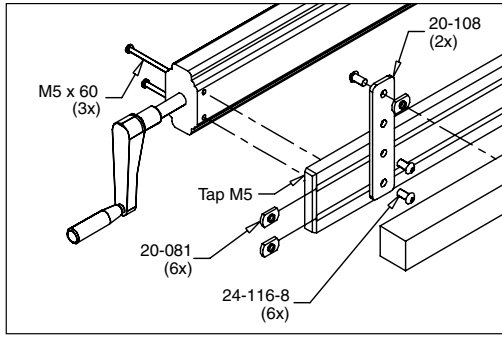
Cylinders are single acting. External force of approx. 67 N (15 lbs.) is required for return stroke.

Tubing length: one at 8' and one at 10' section.

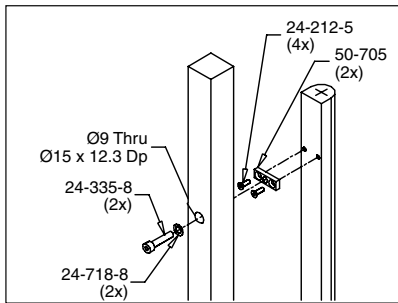
Minimum bending radius for tubing 40mm.

Operating temperature 0 - 115°F.

4-Cylinder Lift System



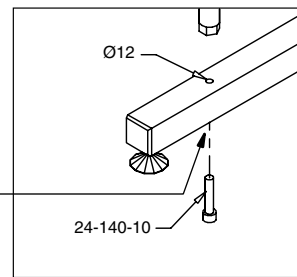
1



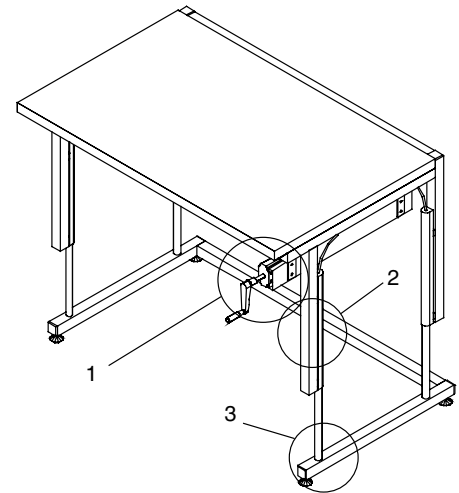
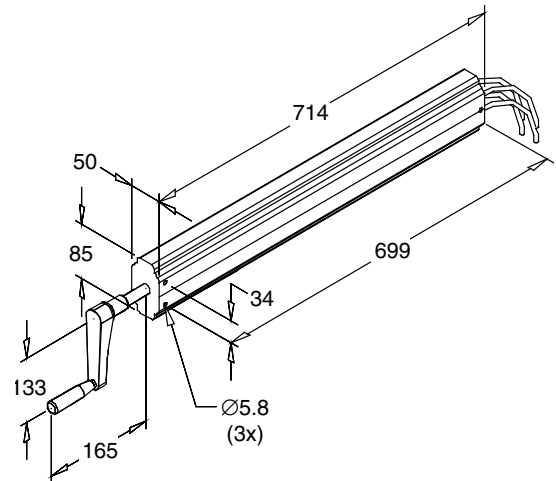
2

Counterbore Ø
15x12mm deep

1 Pump mount details.
2,3 Cylinder mount details
(hardware quantities shown
per cylinder).



3



Application

4-Cylinder Lift System is a compact versatile height adjustment mechanism. It consists of four fluid-drive cylinders connected by flexible tubing to a manual pump with a unique "fold-away" hand crank. The cylinders are completely self-contained, requiring no external support structure.

Each cylinder has five pre-tapped mounting holes: four on a flat side (M5x7mm deep) and one at the bottom (M10x12mm deep).

Technical Data

Maximum lift capacity 3336 N (750lbs.)

Adjustment range 300mm

Cylinders are single acting. External force of approx. 89 N (20 lbs.) is required for return stroke.

Tubing length: two at 8' and two at 10' section.

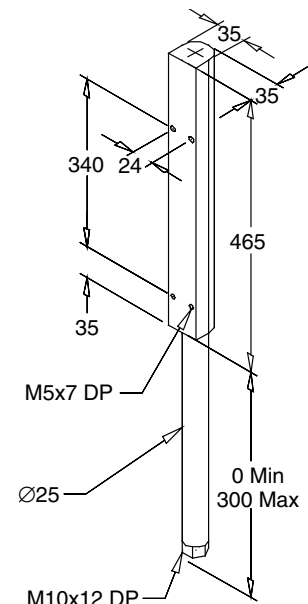
Minimum bending radius for tubing 40mm.

Operating temperature 0 - 115°F.

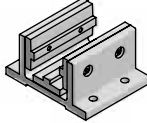
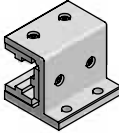
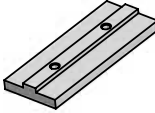

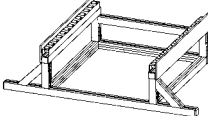

Order all mounting hardware separately (see application sample 1-3).

Ordering Information

Description	Unit	Weight	Part #
4-Cylinder Lift System	1 set	11.7 kg	50-700
Mounting Plate for 50-700 (2 per cylinder)	1 pc	6 g	50-705



Section 8 Linear Applications

Double Flange Slide Blocks 28 and 1" Series 40 and 1.5" Series	192-193 196-197	
Side Flange Slide Blocks 28 and 1" Series 40 and 1.5" Series	194-195 198-199	
Slide Pads & Shims	200	
Slide Block Accessories Clamp Accessories Ratchet Lever Clamp Machining	201 201 202	
Roller Track	203	
LR Series Roller Systems Linear Drive Components	205-221 222-230	

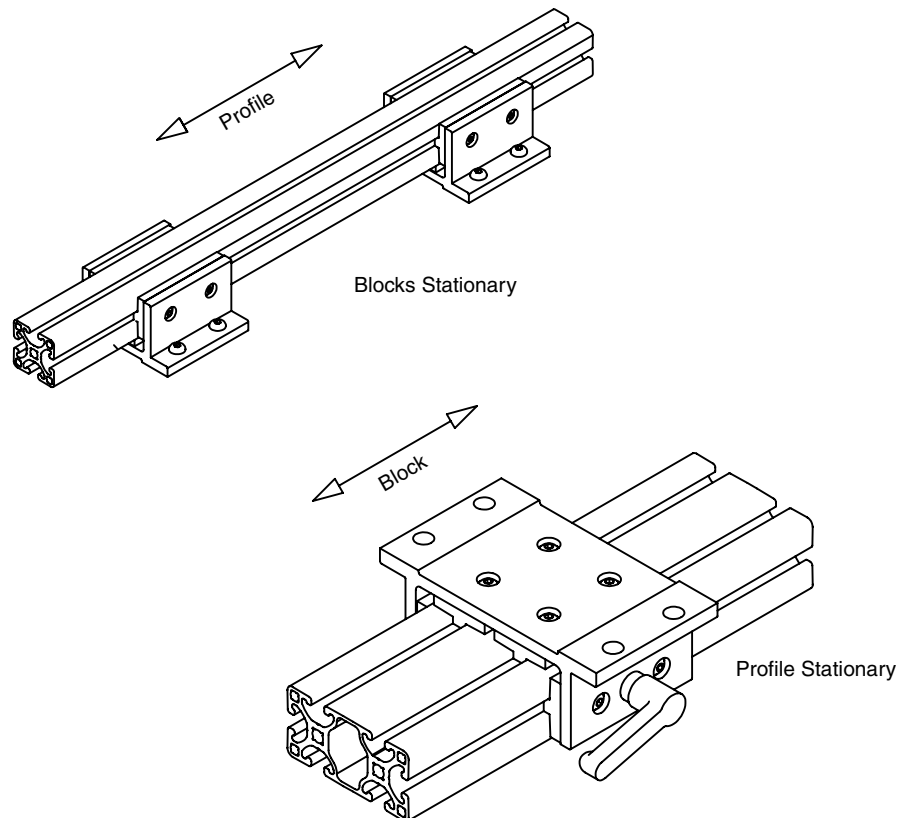
Slide Blocks



Application

Profile Slide Blocks are a versatile, cost efficient concept to build a multitude of adjustable slides and movable rail systems with 40mm and 80mm wide profiles. UMHW slide pads engage directly into the T-slots. Shims provide adjustment for a variety of assembly tolerances. Slide blocks are designed for a compression load – do not hang a load from the pad.

The slide blocks attach to any surface with M8 button head screws. The block slides along a profile when the profile is stationary, or a profile slides in the block, when the block is mounted. Clamping mechanism can be added to lock slide block in place.



UHMW-PE has one of the highest impact strengths of any thermoplastic. It is abrasion resistant, has high tensile strength, displays resistance to stress cracking, and has a low coefficient of friction. It is well-suited where durability and low friction are of paramount importance. Its high resistance to corrosive chemicals, with the exception of oxidizing acids, make it an ideal choice for a wide variety of corrosive environment applications. Maximum operating temperature is 210°F. UHMW-PE can also operate successfully at temperatures as low as -375°F, making it an excellent material for cryogenic applications.

UHMW-PE Design Information

Engineering Specifications of UHMW-Polyethylene

General Properties	Temp.	ASTM Units	Typical Test	Value
Physical				
Specific Gravity	73°F	gms/cc	D792	.830-.934
Water Absorption 24 hours	73°F	%	D670	
Mechanical				
Tensile Strength				
Yield	73°F	10 ³ psi	D638	3.1
Break	73°F	10 ³ psi	D638	7.0
Tensile Elongation				
Yield	73°F	%	D638	—
Break	73°F	%	D638	350
Izod Impact Strength				
Notched	-40°F	ft-lbs/in	D256	21.0
Notched	73°F	ft-lbs/in	D256	30.0
Shore Hardness	73°F		D2240	D62-66
Thermal				
Deflection Temp: 68 psi		°F	D648	203
Coef. of Thermal Exp.		in/in/°F	D698	1.11x10 ⁻⁵
Thermal Conductivity		BTU-in/Hr/Ft/°F		2.92
Flammability Rating, UL94				HB
Electrical				
Diel. Strength (short time)		V/mil	D146	2,300
Dielectric Constant, 50% RH	73°F		D160	2.3
Dissipation Fact., 50% RH	73°F	50 Hz	D160	1.0 x 10 ⁻⁵
		100 Hz		2.5 x 10 ⁻⁵
Volume Resis. Dry	73°F	ohm/cm	D287	>5.0 x 10 ⁻⁵

Bearing Pad Properties

UHMW-PE Deformation under Compression (%)

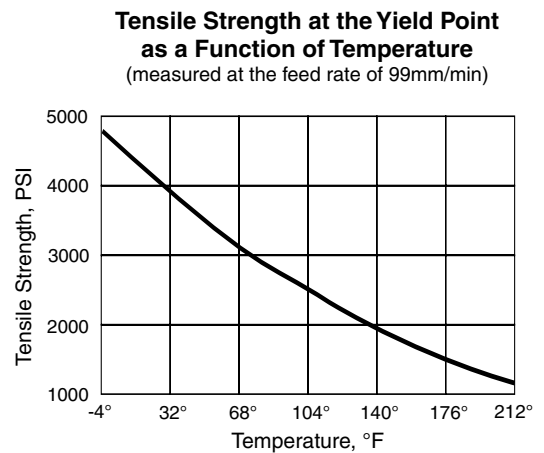
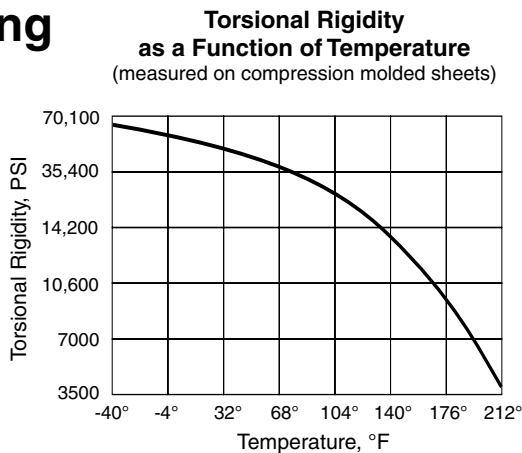
Temp	PSI Compression	Initial Loading					Permanent Deformation After Removal of Load	
		10 Min.	100 Min.	1000 Min.	1 Day	55 Days	After 1 Min.	After 24 Hrs.
68° F	282	1.5	1.7	1.8	1.9	2.4	0.9	0.8
	570	2.4	2.5	2.7	3.0	4.0	1.8	1.2
	850	3.0	4.0	4.5	5.0	5.1	2.7	1.8
	1140	4.0	5.0	6.0	7.0	7.5	3.6	2.4
	1420	5.0	6.6	7.5	8.0	9.0	4.5	2.8
	1700	7.0	7.5	8.0	10.0	11.0	5.4	3.5
122° F	282	1.6	1.8	2.0	2.5	2.6	1.3	0.8
	570	2.6	3.0	3.5	4.0	5.0	2.7	1.5
	850	4.5	5.0	5.5	6.0	7.5	4.1	2.3
	1140	6.0	7.0	8.0	9.0	11.0	5.5	3.1
	1420	7.6	9.0	10.0	11.0	14.0	6.9	3.9
	1700	9.0	11.0	12.0	13.0	16.0	8.2	4.7
176° F	282	2.6	3.0	3.5	4.0	4.5	1.8	1.1
	570	5.0	5.5	6.0	6.5	8.0	3.2	2.3
	850	7.5	8.0	9.0	10.0	12.0	4.8	3.5
	1140	10.0	11.0	12.5	14.0	15.5	6.4	4.6
	1420	12.5	14.0	15.5	17.0	20.0	8.1	5.8
	1700	15.0	17.0	18.0	20.5	24.0	9.7	6.9

Coefficient of Friction

UHMW-PE polymer has a lower coefficient of friction than glass. Together with its self-lubricating characteristics, it is an ideal material for bearings, bushings, valves, wear strips or any application where sliding contact is encountered.

Materials	Static	Kinetic
Aluminum vs. UHMW-PE	0.12	0.016
Anodized 204 R1 spec on extruded aluminum.		

Load Bearing Properties



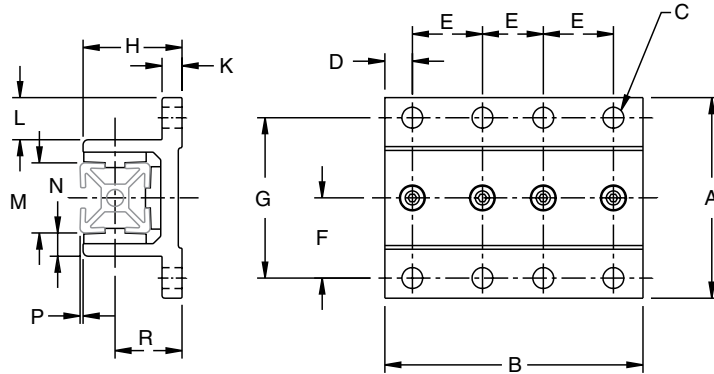
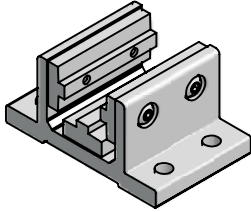
Chemical Resistance of UHMW-PE

Test specimens	Dumb-bell type
Duration of Test	30 days
+ Resistant	Mechanical properties not appreciably affected
/ Limited Resistance	Decreases in yield stress and ultimate tensile strength less than 20%
- Not Resistant	Decreases in yield stress and ultimate tensile strength greater than 20%

Reagent	20°C	50°C	80°C	Reagent	20°C	50°C	80°C
I. Inorganic Acids				V. Hydrocarbons			
Chromic acid (80%)	+	+	/	Benzene	/	/	-
Hydrochloric acid (conc)	+	+	+	Carbon Tetrachloride	/	-	-
Hydrocyanic acid	+	+	-	Cyclohexane	+	+	-
Hydrofluoric acid	-	-	-	Dichloroethylene	-	-	-
Nitric acid (conc)	/	-	-	Diesel oil	+	+	/
Nitric acid (50%)	+	+	/	n-Heptane	+	+	-
Nitric acid (20%)	+	+	+	Petroleum ether	+	-	-
Phosphoric acid (85%)	+	-	-	Trichloroethylene	/	-	-
Sulphuric acid (conc)	+	-	-	Toluene	/	-	-
Sulphuric acid (50%)	+	+	+	White spirit	+	/	-
				Xylene	/	/	-
II. Alkalis				VI. Alcohols, Ketones, Ester and Amines			
Aqueous ammonia	+	+	-	Acetone	+	+	-
Potassium Hydroxide solution	+	+	+	Aniline	+	+	/
Sodium Hydroxide solution	+	+	+	Benzyl alcohol	+	+	+
III. Aqueous Solutions of Inorganic Salts				Butyl alcohol	+	+	+
Aluminum Chloride	+	+	-	Cyclohexanol	+	+	+
Aluminum Nitrate	+	+	+	Ethanol	+	+	-
Bleaching powder	+	+	+	Ethyl acetate	+	+	-
Calcium Chloride	+	+	+	Ethylene glycol	+	+	+
Sodium Carbonate	+	+	+	Glycene	+	+	+
Sodium Chloride	+	+	+	Lauryl alcohol	+	+	+
Sodium Hypochlorite	+	+	+	Propyl alcohol	+	+	+
Zinc Chloride	+	+	+	VII. Miscellaneous			
IV. Organic Acids				Beer	+	+	+
Acetic acid (99%)	+	+	/	Detergents in aqueous solution	+	+	+
Acetic acid (10%)	+	+	+	Distilled water	+	+	+
Butyric acid	+	+	-	Hydrogen peroxide 30%	+	+	-
Citric acid	+	+	+	Linseed oil	+	+	+
Formic acid	+	+	-	Milk	+	+	+
Oleic acid	+	+	/	Olive Oil	+	+	+
				Sea water	+	+	+
				Wine	+	+	+

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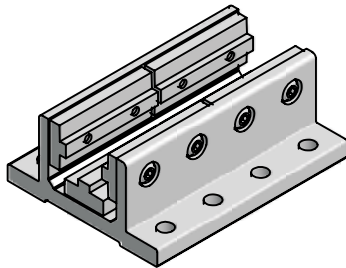
Double Flange 28 x 28 and 1" x 1"



30-2801
30-1002

Part #	A	B	C	D	E	F	G
30-2801	80	50	4xØ8.3	11	28	32	64
30-2808	80	100	8xØ8.3	8	28	32	64
Part #	H	K	L	M	N	P*	R
30-2801	39.5	8	16.75	28	9.25	1.1	26.9
30-2808	39.5	8	16.75	28	9.25	1.1	26.9

* Add 28mm (1.102") when using 12-248 profile.



30-2808
30-1004

Part #	A	B	C	D	E	F	G
30-1002	3.15"	2.00"	4xØ0.28"	0.50"	1.00"	1.25"	2.50"
30-1004	3.15"	4.00"	8xØ0.28"	0.50"	1.00"	1.25"	2.50"
Part #	H	K	L	M	N	P	R
30-1002	1.56"	0.31"	0.66"	1.03"	0.40"	0.06"	1.11"
30-1004	1.56"	0.31"	0.66"	1.03"	0.40"	0.06"	1.11"

Application

These double flange units offer low cost linear guidance. They utilize glide pads oriented within T-slots. You make your own guidance device. You provide the power – pneumatic, electro-mechanical or manual.

Shims are available to provide a more precise fit. See page 201 for optional clamping mechanism and page 202 for machining details.

Technical Data

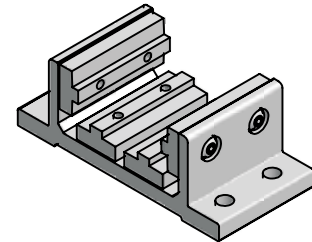
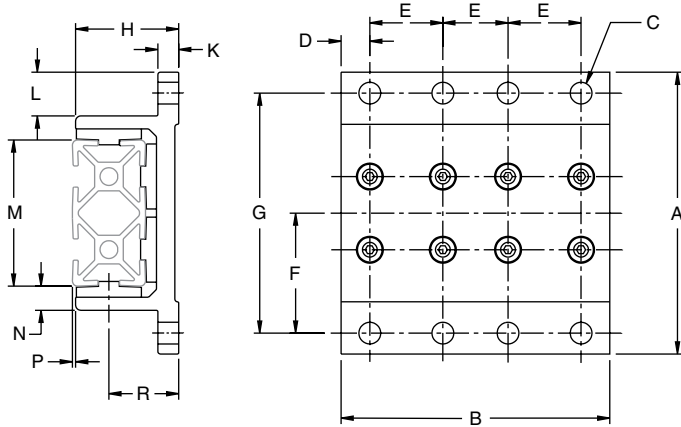
Aluminum, Clear Anodized

UHMW glide pads

Ordering Information

Description	Unit	Weight	Part #
Slide Block 28, 50mm Long	Each	0.14 kg	30-2801
Slide Block 28, 100mm Long	Each	0.58 kg	30-2808
Slide Block 1, 2" Long	Each	0.14 kg	30-1002
Slide Block 1, 4" Long	Each	0.25 kg	30-1004

Double Flange 56 x 28 and 2" x 1"

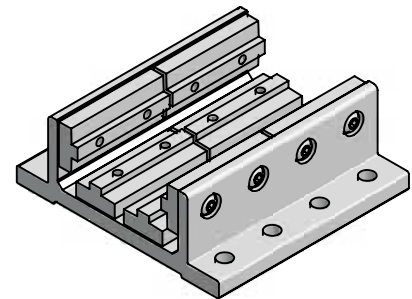


30-5601
30-2002

Part #	A	B	C	D	E	F	G
30-5601	108	50	4xØ8.3	11	28	46	92
30-5608	108	100	8xØ8.3	8	28	46	92
Part #	H	K	L	M	N	P*	R
30-5601	39.5	8	16.75	56	9.25	1.125	26.75
30-5608	39.5	8	16.75	56	9.25	1.125	26.75

* Add 28mm (1.102") when using 12-056 profile.

Part #	A	B	C	D	E	F	G
30-2002	4.25"	2.00"	4xØ0.28"	0.50"	1.00"	1.75"	3.50"
30-2004	4.25"	4.00"	8xØ0.28"	0.50"	1.00"	1.75"	3.50"
Part #	H	K	L	M	N	P	R
30-2002	1.56"	0.31"	0.66"	2.03"	0.45"	0.06"	1.11"
30-2004	1.56"	0.31"	0.66"	2.03"	0.45"	0.06"	1.11"



30-5608
30-2004

Application Data

These double flange units offer low cost linear guidance. They utilize glide pads oriented within T-slots. You make your own guidance device. You provide the power – pneumatic, electro-mechanical, or manual.

Shims are available to provide a more precise fit. See page 201 for optional clamping mechanism and page 202 for machining details.

Technical Data

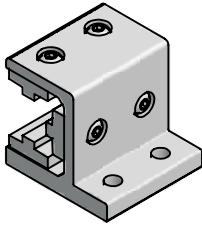
Aluminum, Clear Anodized
 UHMW glide pads

Ordering Information

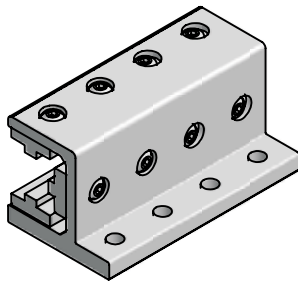
Description	Unit	Weight	Part #
Slide Block 28, 50mm Long	Each	0.34 kg	30-5601
Slide Block 28, 100mm Long	Each	0.72 kg	30-5608
Slide Block 2, 2" Long	Each	0.23 kg	30-2002
Slide Block 2, 4" Long	Each	0.42 kg	30-2004



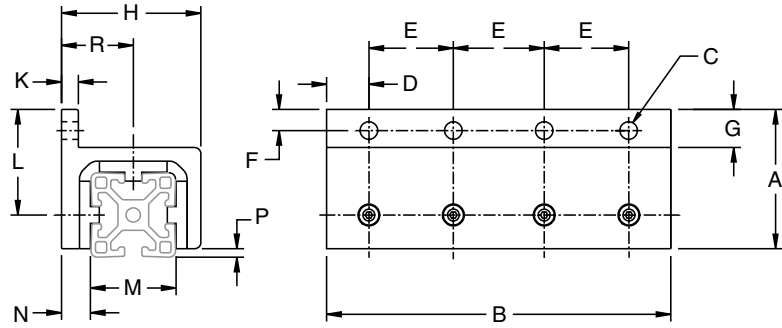
Side Flange 28 x 28 and 1" x 1"



30-2821
30-1012



30-2828
30-1014



Part #	A	B	C	D	E	F	G
30-2821	54	50	2xØ8.3	11	28	10	18
30-2828	54	100	4xØ8.3	8	28	10	18
Part #	H	K	L	M	N	P*	R
30-2821	49.5	8	41	28	11.9	1.2	26.3
30-2828	49.5	8	41	28	11.9	1.2	26.3

* Add 28mm (1.102") when using 12-428 profile.

Part #	A	B	C	D	E	F	G
30-1012	2.13"	2.00"	2xØ0.28"	0.50"	1.00"	0.375"	0.71"
30-1014	2.13"	4.00"	4xØ0.28"	0.50"	1.00"	0.375"	0.71"
Part #	H	K	L	M	N	P	R
30-1012	1.95"	0.31"	1.68"	1.03"	0.52"	0.06"	1.03"
30-1014	1.96"	0.31"	1.68"	1.03"	0.52"	0.06"	1.03"

Application

Used with 28x28 profiles for low cost linear applications where one side is not available for mounting. Delrin slide pads engage directly into the profile T-slots.

Shims are available to provide a more precise fit. See page 201 for optional clamping mechanism and page 202 for machining details.

Technical Data

Aluminum, Clear Anodized

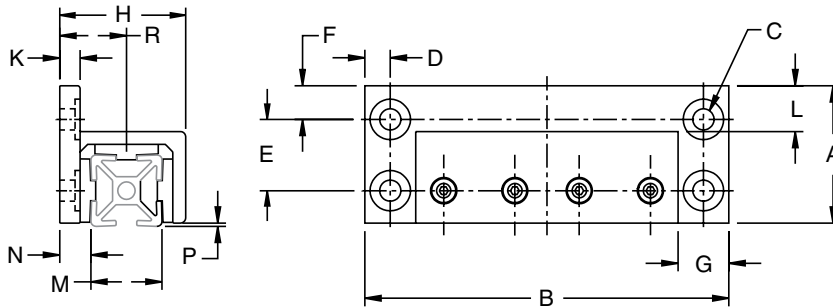
UHMW glide pads

Ordering Information

Description	Unit	Weight	Part #
Slide Block 28, 50mm Long	Each	0.34 kg	30-2821
Slide Block 28, 100mm Long	Each	0.39 kg	30-2828
Slide Block 1", 2" Long	Each	0.14 kg	30-1012
Slide Block 1", 4" Long	Each	0.25 kg	30-1014

Note: All dimensions in mm (in)

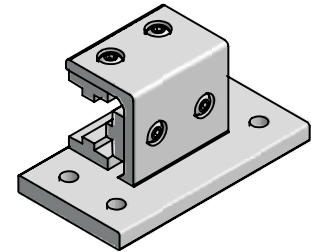
**Side Flange
 Extended
 28 x 28 and 1" x 1"**



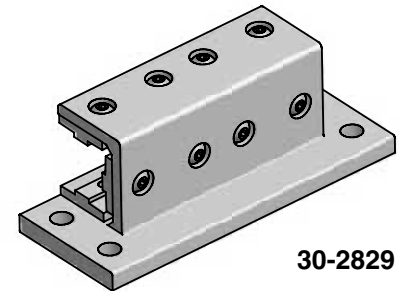
Part #	A	B	C	D	E	F	G
30-2822	54	90	4xØ8.3	10	28	13.2	20
30-2829	54	140	4xØ8.3	10	28	13.2	20
Part #	H	K	L	M	N	P*	R
30-2822	49.5	8	18	28	12	11.9	26.3
30-2829	49.5	8	18	28	12	11.9	26.3

* Add 28mm (1.102") when using 12-428 profile.

Part #	A	B	C	D	E	F	G
30-1024	2.13"	4.00"	4xØ0.28"	0.50"	1.00"	0.56"	1.00"
Part #	H	K	L	M	N	P	R
30-1024	1.95"	0.31"	0.71"	1.03"	0.52"	0.06"	1.03"



**30-2822
 30-1024**



30-2829

Application

Used with 28x28 profiles for low cost linear applications where one side is not available for mounting. Delrin slide pads engage directly into the profile T-slots. Shims are available to provide a more precise fit. See page 201 for optional clamping mechanism and page 202 for machining details.

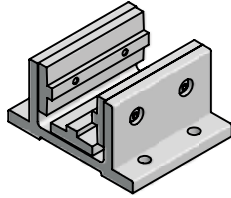
Technical Data

Aluminum, Clear Anodized
 UHMW glide pads

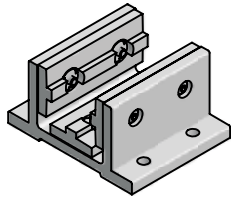
Ordering Information

Description	Unit	Weight	Part #
Slide Block 28, 90mm Long	Each	0.34 kg	30-2822
Slide Block 28, 140mm Long	Each	0.72 kg	30-2829
Slide Block 1" Extended, 4" Long Each		0.26 kg	30-1024

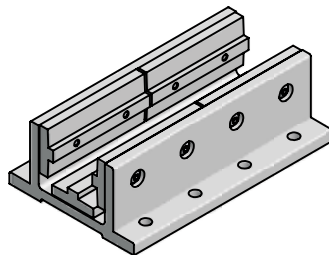
Double Flange 40 x 40 and 1.5" x 1.5"



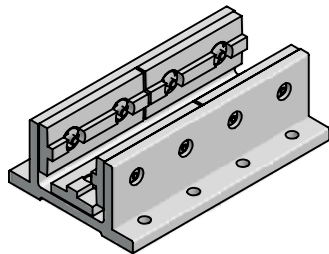
30-4001
30-1503



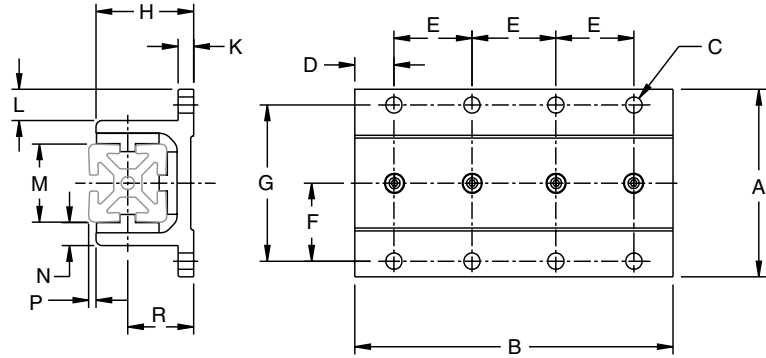
30-4001HC
30-1503HC



30-4008
30-1506



30-4008HC
30-1506HC



Part #	A	B	C	D	E	F	G
30-4001	96	80	4xØ8.3	20	40	40	80
30-4008	96	160	8xØ8.3	20	40	40	80
Part #	H	K	L	M	N	P*	R
30-4001	50	8	16	40	12	4	34
30-4008	50	8	16	40	12	4	34

* Add: 40mm (1.575") when using 10-080, 10-680 or 11-080 profile.
80mm (3.15") when using 10-120 profile.
120mm (4.72") when using 10-164 or 11-140 profile.

Part #	A	B	C	D	E	F	G
30-1503	3.78"	3.00"	4xØ0.28"	0.75"	1.50"	1.50"	3.00"
30-1506	3.78"	6.00"	8xØ0.28"	0.75"	1.50"	1.50"	3.00"
Part #	H	K	L	M	N	P	R
30-1503	1.97"	0.31"	0.63"	1.52"	0.50"	0.12"	1.34"
30-1506	1.97"	0.31"	0.63"	1.52"	0.50"	0.12"	1.34"

Application

Bearing block for slides and movable rail applications requiring very cost efficient construction. This block can be used on 40 series Standard or Heavy profiles. High cycle (HC) units utilize a steel threaded insert to mount the pad to the unit. These specially designed slide block units are used in high cycle applications where rapid acceleration and deceleration takes place.

Shims are available to provide a more precise fit. See page 201 for optional clamping mechanism and page 202 for machining details.

Technical Data

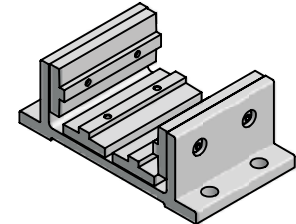
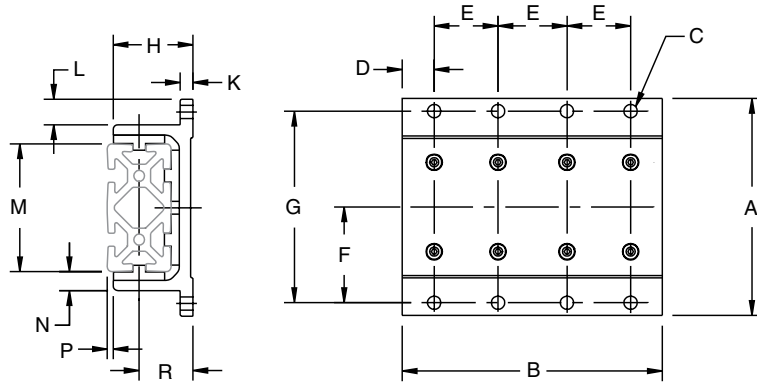
Aluminum, Clear Anodized
UHMW glide pads

Safe load:
30-4001 or 30-1503 = 1,000 N (225 lbs)
30-4008 or 30-1506 = 2,000 N (450 lbs)

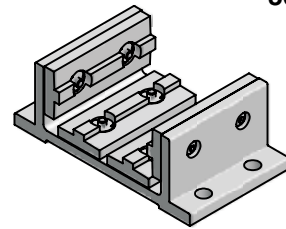
Ordering Information

Description	Unit	Weight	Part #
Slide Block 40, 80mm Long	1 pc	0.31 kg	30-4001
Slide Block 40, 160mm Long	1 pc	0.62 kg	30-4008
Slide Block 40 HC, 80mm Long	1 pc	0.31 kg	30-4001HC
Slide Block 40 HC, 160mm Long	1 pc	0.62 kg	30-4008HC
Slide Block 1.5, 3" Long	1 pc	0.31 kg	30-1503
Slide Block 1.5, 6" Long	1 pc	0.62 kg	30-1506
Slide Block 1.5 HC, 3" Long	1 pc	0.31 kg	30-1503HC
Slide Block 1.5 HC, 6" Long	1 pc	0.62 kg	30-1506HC

Double Flange 80 x 40 and 3" x 1.5"



30-8001
30-3003

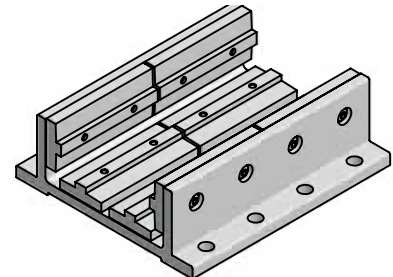


30-8001HC
30-3003HC

Part #	A	B	C	D	E	F	G
30-8001	136	80	4xØ8.3	20	40	60	120
30-8008	136	160	8xØ8.3	20	40	60	120
Part #	H	K	L	M	N	P*	R
30-8001	50	8	16	80	12	3.7	34
30-8008	50	8	16	80	12	3.7	34

* Add: 40mm (1.575") when using 10-088 or 11-088 profile.
 120mm (4.72") when using 10-160 or 11-160 profile.

Part #	A	B	C	D	E	F	G
30-3003	5.35"	3.00"	4xØ0.34"	0.75"	1.50"	2.35"	4.69"
30-3006	5.35"	6.00"	8xØ0.34"	0.75"	1.50"	2.35"	4.69"
Part #	H	K	L	M	N	P	R
30-3003	1.97"	0.31"	0.63"	3.02"	0.54"	0.12"	1.34"
30-3006	1.93"	0.31"	0.63"	3.02"	0.54"	0.12"	1.34"



30-8008
30-3006

Application

Bearing block for slides and movable rail applications requiring very cost efficient construction. This block can be used on the 80mm side of 40 series Standard or Heavy profiles. High cycle (HC) units utilize a steel threaded insert to mount the pad to the unit. These specially designed slide block units are used in high cycle applications where rapid acceleration and deceleration takes place.

Shims are available to provide a more precise fit. See page 201 for optional clamping mechanism and page 202 for machining details.

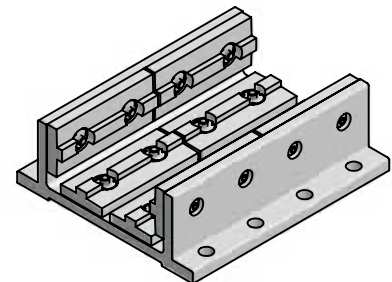
Technical Data

Aluminum, Clear Anodized
 UHMW glide pads

Safe load:
 30-8001 or 30-3003 = 2,000 N (450 lb)
 30-8008 or 30-3006 = 4,000 N (900 lb)

Ordering Information

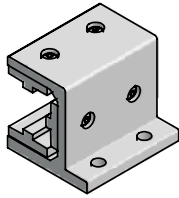
Description	Unit	Weight	Part #
Slide Block 80, 80mm Long	1 pc	0.38 kg	30-8001
Slide Block 80, 160mm Long	1 pc	0.76 kg	30-8008
Slide Block 80 HC, 80mm Long	1 pc	0.38 kg	30-8001HC
Slide Block 80 HC, 160mm Long	1 pc	0.76 kg	30-8008HC
Slide Block 3, 3" Long	1 pc	0.38 kg	30-3003
Slide Block 3, 6" Long	1 pc	0.76 kg	30-3006
Slide Block 3 HC, 3" Long	1 pc	0.38 kg	30-3003HC
Slide Block 3 HC, 6" Long	1 pc	0.76 kg	30-3006HC



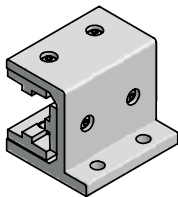
30-8008HC
30-3006HC



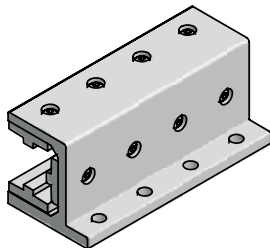
Side Flange 40 x 40 and 1.5" x 1.5"



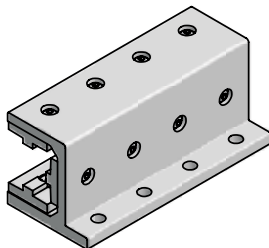
30-4021
30-1513



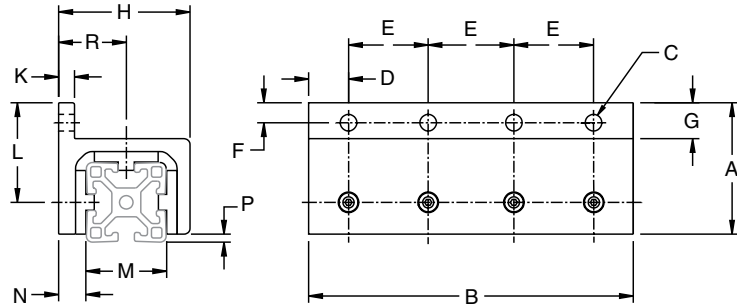
30-4021HC
30-1513HC



30-4028
30.1523



30-4028HC
13-1523HC



Part #	A	B	C	D	E	F	G
30-4021	66	80	2xØ8.3	20	40	10	18
30-4028	66	160	4xØ8.3	20	40	10	18
Part #	H	K	L	M	N	P*	R
30-4021	66	8	50	40	14	4	34
30-4028	66	8	50	40	14	4	34

* Add: 40mm (1.575") when using 10-080, 10-680 or 11-080 profile.
80mm (3.15") when using 10-120 profile.
120mm (4.72") when using 10-164 or 11-140 profile.

Part #	A	B	C	D	E	F	G
30-1513	2.60"	3.00"	2xØ0.34"	0.75"	1.50"	0.38"	0.71"
30-1523	2.60"	6.00"	4xØ0.34"	0.75"	1.50"	0.38"	0.71"
Part #	H	K	L	M	N	P	R
30-1513	2.60"	0.31"	1.97"	1.61"	0.58"	0.12"	1.34"
30-1523	2.60"	0.31"	1.97"	1.61"	0.58"	0.12"	1.34"

Application

Used with 40x40 or 1.5"x1.5" profiles for low cost linear applications where one side is not available for mounting. Slide pads engage directly into the profile T-slots. Shims are available to provide a more precise fit. High cycle (HC) units utilize a steel threaded insert to mount the pad to the unit. These specially designed slide block units are used in high cycle applications where rapid acceleration and deceleration takes place.

Optional clamping mechanism can be added as required. Each clamp requires a machined hole. Refer to pages 201-202 for details

Technical Data

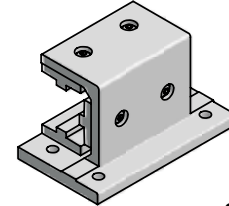
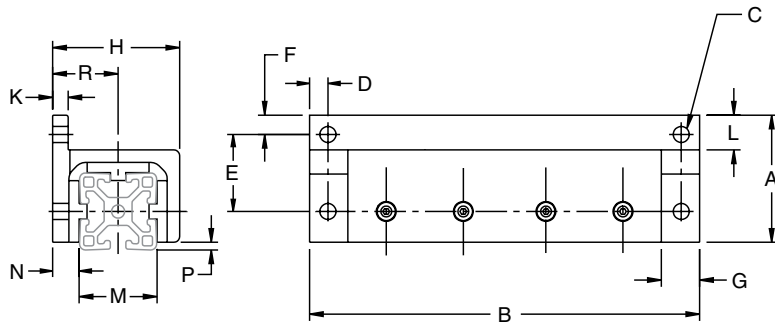
Aluminum, Clear Anodized

UHMW glide pads

Ordering Information

Description	Unit	Weight	Part #
Slide Block 40, 80mm Long	Each	0.31 kg	30-4021
Slide Block 40, 160mm Long	Each	0.42 kg	30-4028
Slide Block 40 HC, 80mm Long	Each	0.31 kg	30-4021HC
Slide Block 40 HC, 160mm Long	Each	0.42 kg	30-4028HC
Slide Block 1.5, 3" Long	Each	0.31 kg	30-1513
Slide Block 1.5, 6" Long	Each	0.62 kg	30-1523
Slide Block 1.5 HC, 3" Long	Each	0.31 kg	30-1513 HC
Slide Block 1.5 HC, 6" Long	Each	0.62 kg	30-1523 HC

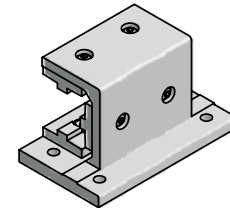
Side Flange Extended 40 x 40 and 1.5" x 1.5"



30-4022
30-1516

Part #	A	B	C	D	E	F	G
30-4022	66	120	4xØ8.3	10	40	10	20
30-4029	66	200	4xØ8.3	10	40	10	20
Part #	H	K	L	M	N	P*	R
30-4022	66	8	18	40	14	4	34
30-4029	66	8	18	40	14	4	34

* Add: 40mm (1.575") when using 10-080, 10-680 or 11-080 profile.
 80mm (3.15") when using 10-120 profile.
 120mm (4.72") when using 10-164 or 11-140 profile.



30-4022HC
30-1516HC

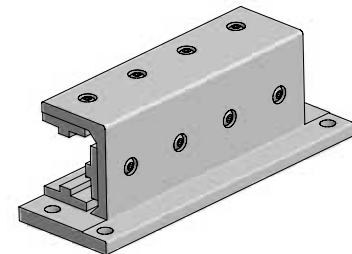
Part #	A	B	C	D	E	F	G
30-1516	2.60"	4.50"	4xØ0.34"	0.50"	1.50"	0.47"	0.75"
Part #	H	K	L	M	N	P*	R
30-1516	2.60"	0.31"	1.97"	1.50"	0.58"	0.12"	1.34"

Application

Used with 40x40 or 1.5"x1.5" profiles for low cost linear applications where one side is not available for mounting. Slide pads engage directly into the profile T-slots. Shims are available to provide a more precise fit.

High cycle (HC) units utilize a steel threaded insert to mount the pad to the unit. These specially designed slide block units are used in high cycle applications where rapid acceleration and deceleration takes place.

Optional clamping mechanism can be added as required. Each clamp requires a machined hole. Refer to pages 201-202 for details.



30-4029

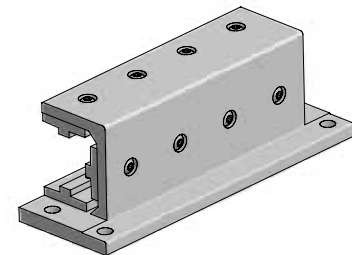
Technical Data

Aluminum, Clear Anodized

UHMW glide pads

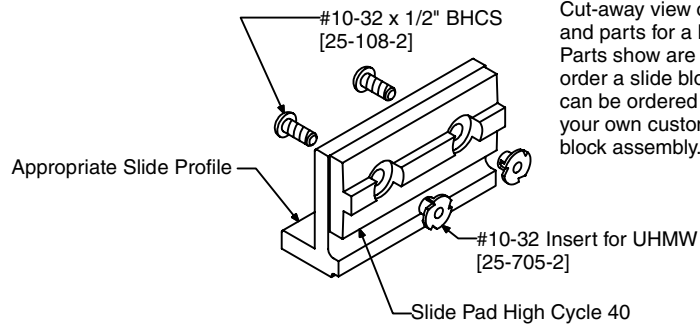
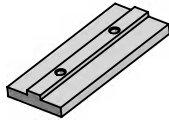
Ordering Information

Description	Unit	Weight	Part #
Slide Block 40, 120mm Long	Each	0.34 kg	30-4022
Slide Block 40, 200mm Long	Each	0.72 kg	30-4029
Slide Block 40 HC, 120mm Long	Each	0.34 kg	30-4022HC
Slide Block 40 HC, 200mm Long	Each	0.72 kg	30-4029HC
Slide Block 1.5, 4.5" Long	Each	0.37 kg	30-1516
Slide Block 1.5 HC, 4.5" Long	Each	0.37 kg	30-1516HC



30-4029HC

Slide Pads & Shims



Application

Glide pads let you custom design a low friction guidance unit. Slide pad can also be attached to a profile to serve as a guide in sliding door applications.

Technical Data

Slide Pad: UHMW

Shim: PET (polyethylene terephthalate),
 0.005" thick

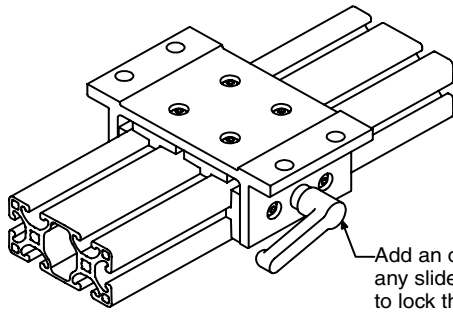
Recommended Fastener: 24-112-5

Ordering Information

Description	Unit	Part #
Slide Pad 28 Series, 80mm*	1 pc	30-2800-2
Slide Pad 40 Series, 80mm*	1 pc	30-4000-2
Slide Pad 40 Series, 300mm†	1 pc	30-4000-3
Slide Pad 40 Series, 80mm High Cycle	1 pc	30-4000-6
Shim 80	pkg of 4	30-412Z2
Shim 160	pkg of 4	30-812Z2
Slide Pad, 1" x 2" *	1 pc	30-1000
Slide Pad, 1" x 2" Top*	1 pc	30-1001
Slide Pad, 1" x 2" Top*	1 pc	30-2000
Slide Pad, 1.5" x 3" *	1 pc	30-1500
Slide Pad, 1.5" x 3" High Cycle	1 pc	30-1501
Slide Pad, 3" *	1 pc	30-3000
Slide Pad, 3" High Cycle	1 pc	30-3001

* Tapped

† Un-tapped



Add an optional locking handle to any slide block, to provide a mechanism to lock the slide block in place anywhere on the extrusion.

Application

These clamp accessories provide positioning and adjustment for 40 Series slide units. Handles provide mechanism to lock the slide block in place anywhere on the extrusion.

Slide extrusions and pads can be drilled to accept clamp.

Ordering Information

Description	Width (mm)	Depth (mm)	Part #	
			40/1.5" Series	28 Series
Ratcheting L-Handle	63	32.8	30-0011	30-0001
Star Handle	40	36.7	30-0015	30-0005

Clamp Accessories



30-0001



30-0005



30-0011



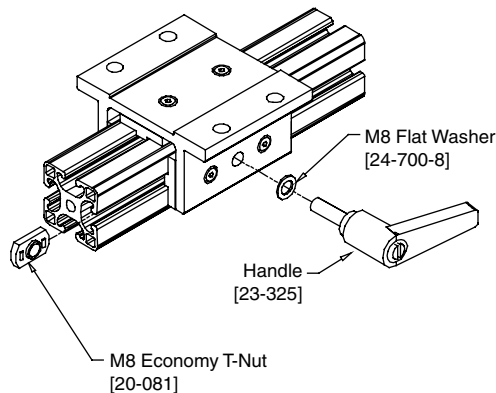
30-0015

Application

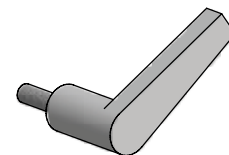
For use on applications where a locking handle is desired, particularly on profile slide blocks. A 9mm hole is required to mount the ratchet lever.

Technical Data

Fiber reinforced techno-polymer plastic with metal insert. Hardware varies with application.



Ratchet Lever



23-325

Ordering Information

Description	Unit	Weight	Part #
Ratchet Lever M8 x 16	Each	87 g	23-316
Ratchet Lever M8 x 20	Each	43 g	23-320
Ratchet Lever M8 x 25	Each	45 g	23-325
Ratchet Lever M8 x 40	Each	50 g	23-340
Ratchet Lever M8 x 50	Each	53 g	23-350
Ratchet Lever M8 x 63	Each	57 g	23-363



Clamp Machining

Slide blocks may be pre-drilled for mounting of the clamp. If drilling is desired, specify the machining service number and give the location of the hole(s) to be drilled according to the drawings below.

Ordering Information

Profiles	Hole Size	Machining Service No.
28, 56, 40, 80, 1.5"	Ø0.323"	19-140

Ordering Examples:

Slide block drilled for one clamp

(note the description added to the slide block part number):

30-2822 w/19-140 @ LU

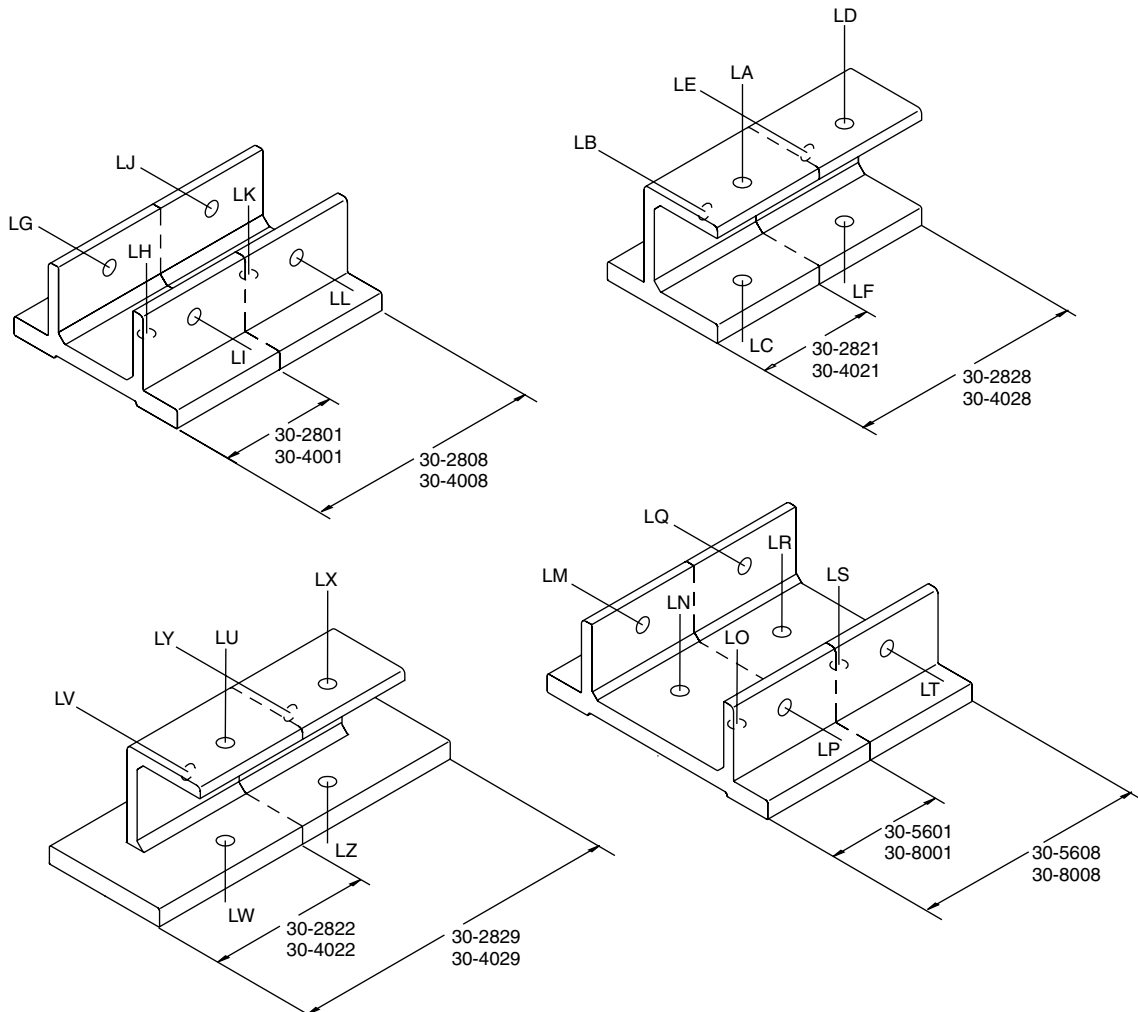
Multiple clamps may be mounted on a slide block. Each clamp requires a hole to be drilled. Note the description and the number of holes is added to the slide block part number.

Guide drilled for two clamps:

30-4008 w/19-140 @ LG and LL

Guide drilled for three clamps:

30-8008 w/19-140 @ LP, LT and LM



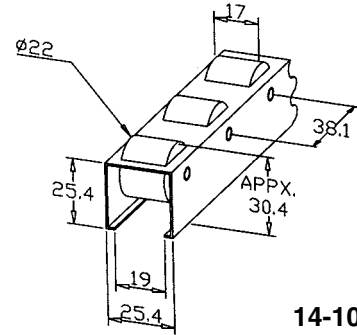
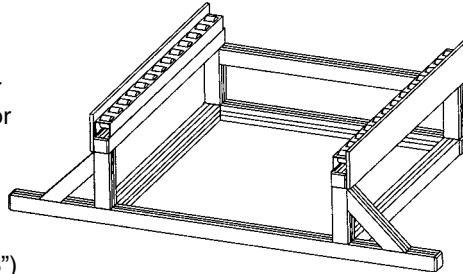
Roller Track

Application

Economical track for flow rack system. Usually use two tracks per runway but three or four may be used with heavy or wide loads. Can be attached to 40, 30 or 28 Series profiles.

Technical Data

Channel: rolled steel, galvanized (0.028")
 Roller: PE, white
 Load: 22 N (5 lbs) per roller



14-100

Ordering Information

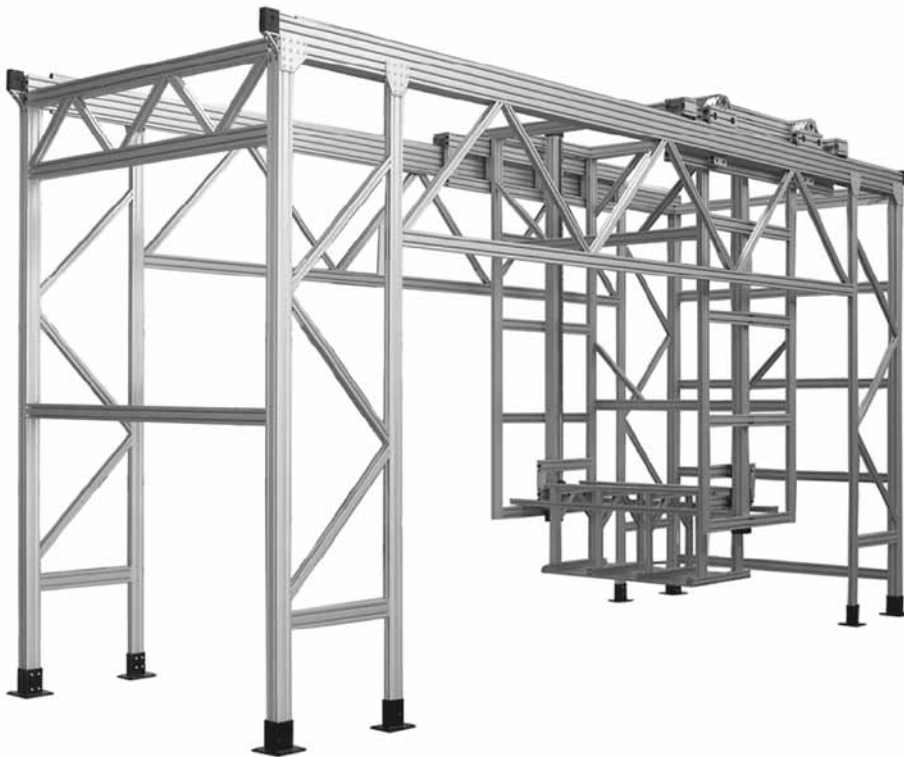
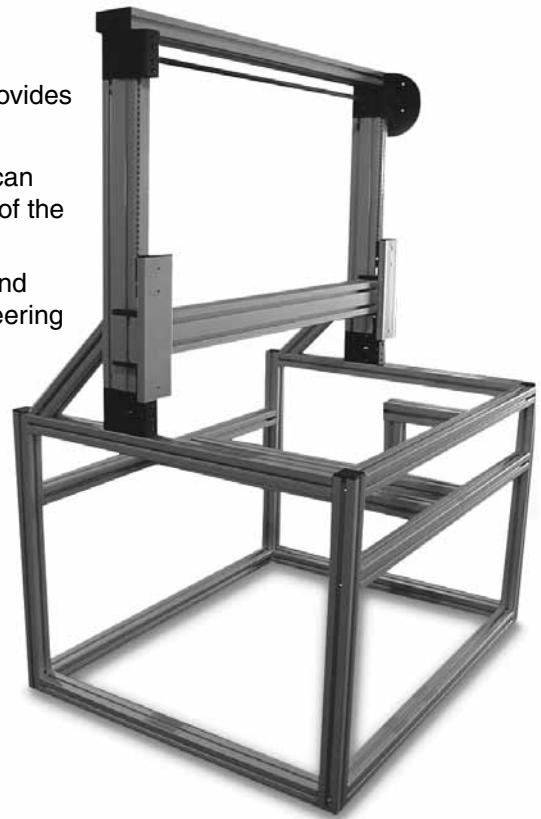
Description	Unit	Part #
Roller Track	per meter, max. 3M	14-100
Saw cut necessary for cut to length		19-007

LR Series System Solutions

LR Series provides seamless integration with engineered structures from Parker IPS providing a more complete system solution.

Integrating LR Series products with Parker IPS structural systems provides clear advantages over welded steel construction.

- Welding distortion is eliminated producing a highly accurate finished product
- Anodized aluminum is corrosion resistant and does not require painting or maintenance.
- Shorter delivery lead times than other fabrication techniques
- Modifications and changes can be made through all stages of the project
- Integrating motion, control and structure streamlines engineering and supply chain channels.
- Fast, accurate 3D system drawings



LR Series and Parker IPS provide solutions to a wide variety of industries and applications including:

- Automotive
- Industrial Manufacturing
- Life-Sciences
- Packaging
- Material Handling
- Machine Building
- Aerospace
- Textiles
- Pulp & Paper
- Semi-conductor

The LR Series Belt Drive Roller System from Parker IPS

Linear Roller Series products from Parker IPS provide a high level of accuracy, load-bearing strength, and flexibility in a modular, low-cost package. These products utilize standard components and can adapt to a wide range of applications.

The foundation of the LR product line is the 40 Series of structural profiles that offer numerous mounting configurations. Profiles allowing maximum unsupported spans can be selected, saving valuable space and reducing overall system costs. Standard lengths of 6m and the ability to splice multiple sections allow configuration of nearly infinite stroke.

LR Roller Bearings are made of 100 Cr6, ground and hardened steel, and provide low friction, long life, high speed, and heavy load capabilities. Bearing units are available as single and double roller types. Custom carriage configurations using multiple bearing units can be set up to meet off-the-shelf lead times.

The modular design allows for easy assembly, fast engineering, and a flexible platform capable of meeting even the most demanding application.

Market Applications

- **Material Handling**
- **Gantry Systems**
- **Visual Inspection**
- **Assembly and Transfer Lines**



- **Carriage loads to 2597 lbs**
- **Custom carriage options**
- **Speeds up to 5m/sec**
- **Easy mounting to AC motors**
- **Stroke lengths over 6m**
- **Instant motor/gearbox approval**

Performance Overview

	LR 6	LR 14	LR 14HD	LR 25
Maximum Carriage Load N (lbs)	649 (146)	2,669 (600)	3,350 (753)	11,552 (2,597)
Pully Diameter (mm): Reversing Unit 40	47.75	47.75	47.75	47.75
Pully Diameter (mm): Reversing Unit 80	89.12	89.12	89.12	89.12
Pully Lead (mm/rev): Reversing Unit 40	150	150	150	150
Pully Lead (mm/rev): Reversing Unit 80	280	280	280	280
Maximum Travel Without Splice (mm)*	5900	5850	5840	5680
Minimum Travel (mm)	300	250	240	80
Maximum Drive Torque (Nm): Reversing Unit 40	20	20	20	20
Maximum Drive Torque (Nm): Reversing Unit 80	37	37	37	37
Maximum Belt Traction (lbs/belt)	575	575	575	575
Maximum Number of Belts	1	2	2	4
Maximum Speed (m/s)	5	5	5	5
Maximum Acceleration at No Load (m/s ²)	10	10	10	10
Repeatability (mm)	± .10	± .10	± .10	± .10

* Consult factory for long travel lengths.

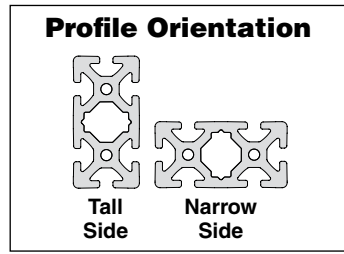
Order Example

LR | B | 5 | 2 | S0150 | B | 2000 | R1 | S1 | F1 | - | A22A34

- ✓ **System Size**
 LR 6..... A
 LR 14..... B
 LR 14HD..... C
 LR 25..... D
- ✓ **Extrusion Selection*****
 40x80 Standard..... 3
 40x80 Heavy..... 4
 80x80 Standard..... 5
 80x80 Heavy..... 6
 80x80 Super Heavy..... 7
 80x160 Standard..... 8
 160x80 Heavy..... 9
 120x80 Heavy..... 0
- ✓ **Profile Orientation**
 Tall Side (see example figures)..... 1
 Narrow Side (see example figures)..... 2
- ✓ **Bearing Configuration**
 Double Bearing
 (xxx is standard carriage length)..... Dxxx
 Single Bearing (see page 200 for min.)
 (enter total carriage length in mm)..... Sxxx
- ✓ **Type**
 Belt Drive..... B
 Manual..... M
- ✓ **Travel**
 Travel Length (mm)..... xxx
- ✓ **Reversing Unit Combinations**
 None (Manual Option Only)..... R1
 Spline/Idler..... R2
 Spline/Spline..... R3
 Spline/8mm Bore..... R4
 Idler/Idler..... R5
 Idler/8mm Bore..... R6
 8mm Bore/8mm Bore..... R7
- ✓ **Adapter Shafts (couplers)†**
 Blank – No Servicing..... S1
 Special Servicing*..... S2
 Shaft Type A, 0.375 in (9.525 mm)..... S3
 Shaft Type B, 0.433 in (11mm)..... S4
 Shaft Type C, 0.5 in (12.7mm)..... S5
 Shaft Type D, 0.551 in (14mm)..... S6
 Shaft Type E, 0.625 in (15.875mm)..... S7
 Shaft Type F, 0.63" (16mm)..... S8

- ✓ **Accessories**
 (Replace # with Quantity Required)
 A1# Bumpers
 A2# Proximity Switch
 A3# Exciter Cam
 A5# Hand Crank Assembly**
 A6# Carriage Locking Mechanism**
 A7 Reversing Unit 80
 A8 Extra Bearing Set
- ✓ **Adapter Flange†**
 (See Dim. Table)
 F1 Blank, No Servicing
 F2 Universal Adapter Special Servicing*
 F3 Mounting Type A
 F4 Mounting Type B
 F5 Mounting Type C
 F6 Mounting Type D
 F7 Mounting Type E
 F8 Mounting Type F
 F9 Mounting Type G**

* Contact customer service for technical assistance
 **Manual systems only
 † See page 204 for instant motor/gearbox approval selection



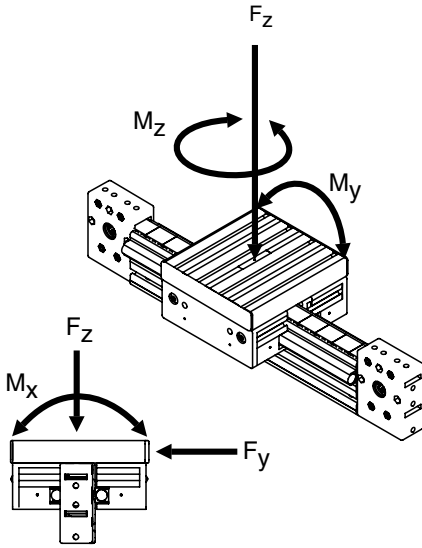
Adapter Flange Mount Type	Bolt Circle	Bolt Size	Pilot Dia.	Pilot Depth
A	98.40	M5	73.02	3.5
B	66.70	M4	38.10	2.0
C	75.00	M5	60.00	3.0
D	98.40	M6	73.02	3.5
E	100.00	M6	80.00	4.0
F	70.00	M4	50.00	3.5
G	90.00	M5	70.00	3.5

*** All profiles do not fit with all system sizes. Contact factory for application assistance.

Note: All flange data in mm



Loading Capacity



LR6 Series

Static Moment Loads

Determine which moment loads are induced by the static load. Locate the center of gravity of the load and the length of the moment arm.

Moment Arm Lengths

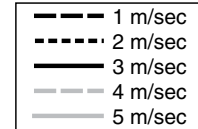
Determine the moment arm lengths associated with each moment load by measuring the distance from the center of the load to the center of the carriage in each moment load direction.

Pitch Moment

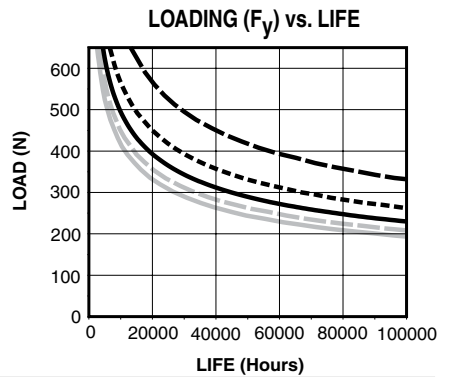
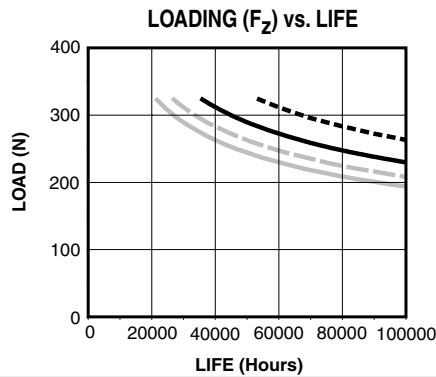
When determining the pitch moment arm, it is necessary to consider the distance from the top of the load attachment plate to the center of the carriage bearings.

Operating Condition	Load Factor
Steady Load	1
Fluctuating Load	–
Low	1.4
Average	1.7
High	2

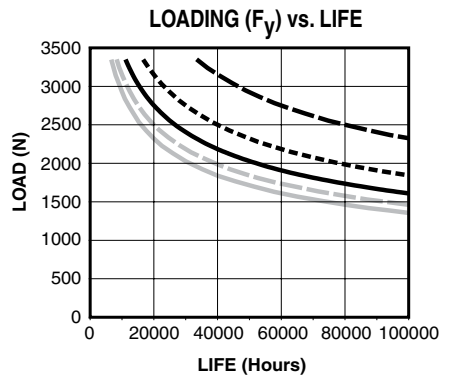
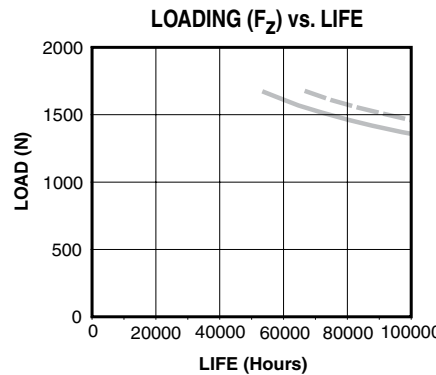
Load Capacity = Load * Load Factor



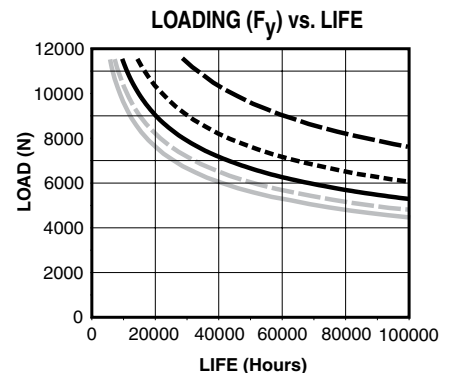
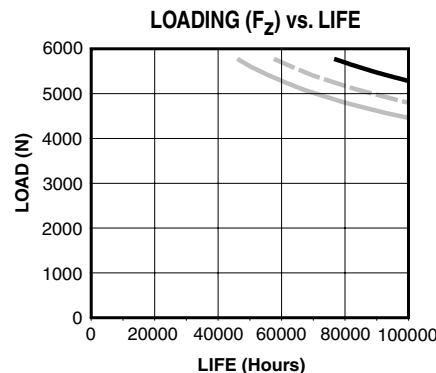
Key for charts on pages 4 and 5



LR14/14HD Series

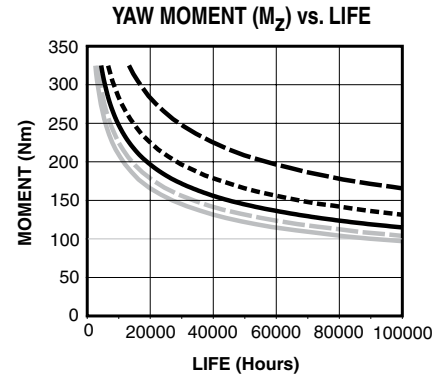
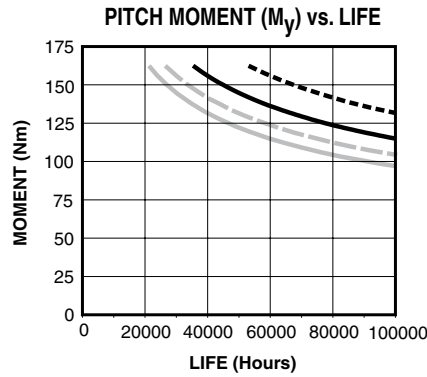
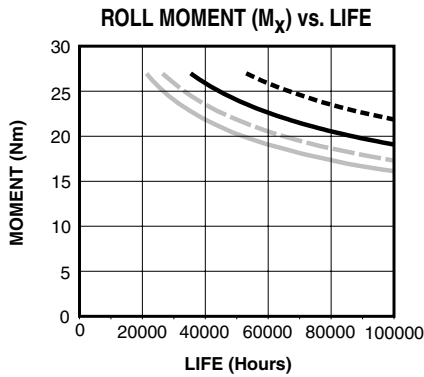


LR25 Series

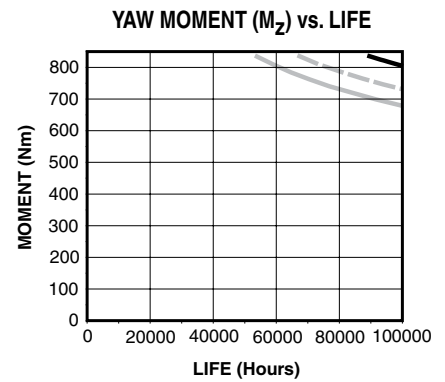
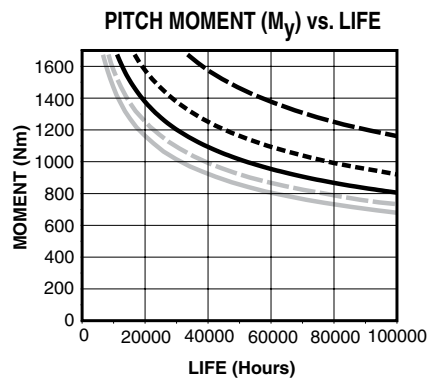
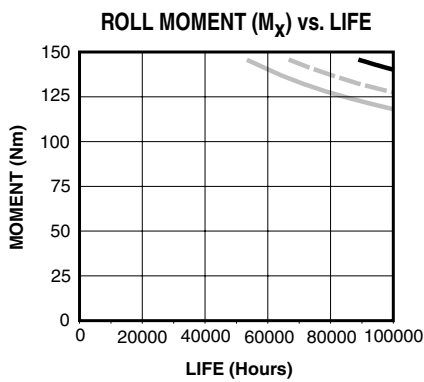


Loading Capacity

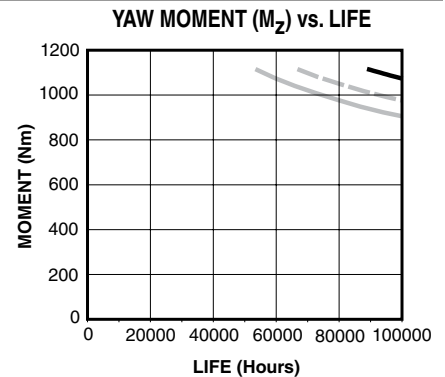
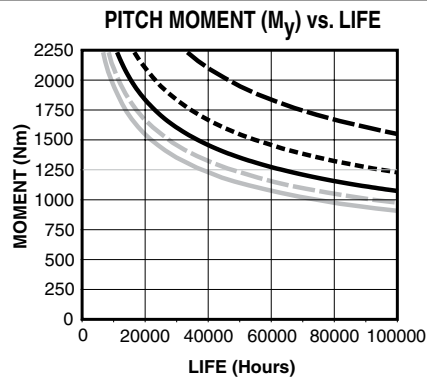
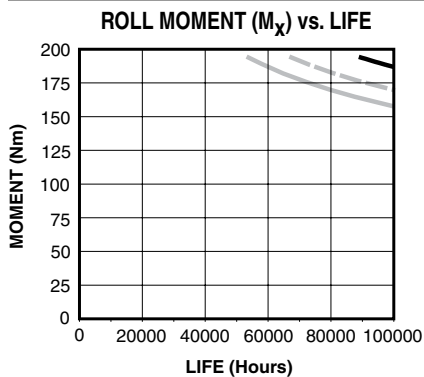
LR6 Series



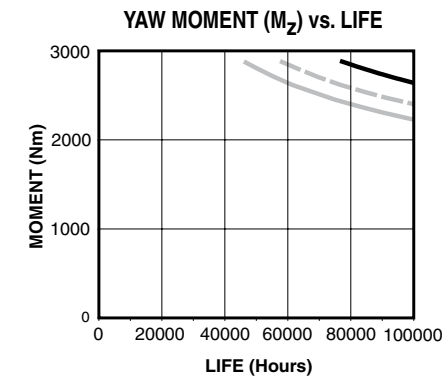
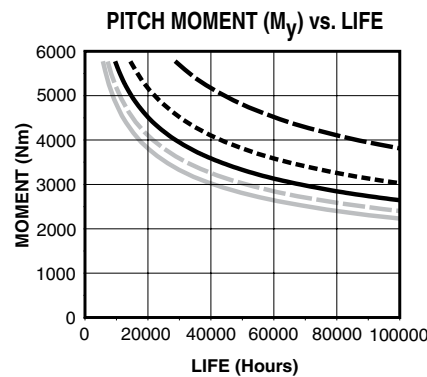
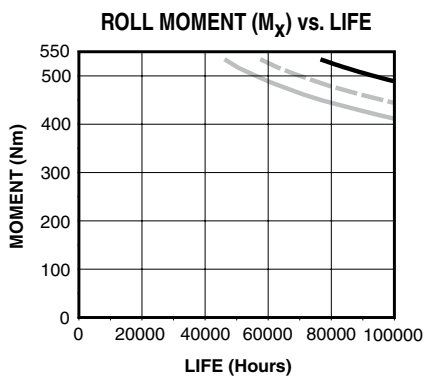
LR14 Series



LR14HD Series



LR25 Series



Carriage Information

Carriage Mounting Detail

LR Series actuators offer unmatched carriage flexibility. Available in fixed length double bearing units or adjustable length single bearing units, the carriage can be tailored to meet specific load requirements.

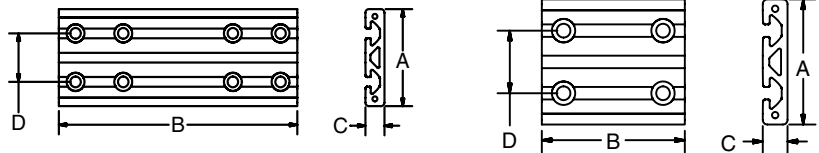
Series	Carriage	Width A	Length B	Thickness C	T-Slot D	Weight (kg)
LR6*	Single	80	300 min.	16	39	Variable
	Double	80	242	16	39	0.8
LR14*	Single	160	140 min.	28	40	Variable
	Double	160	141.6	28	40	3.24
LR14HD*	Single	159.5	160 min.	28	40	Variable
LR25	Single	Consult Factory				

* Based on 40 mm Profile Width for LR6, LR14, and LR14HD

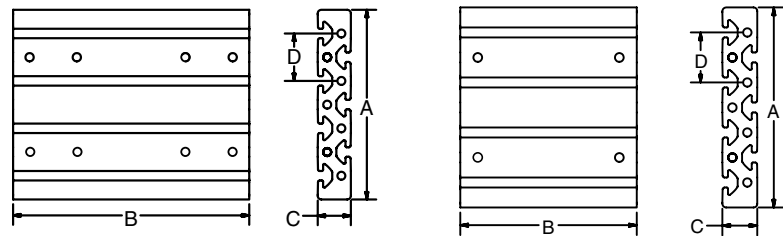
Single Bearing Carriage

Double Bearing Carriage

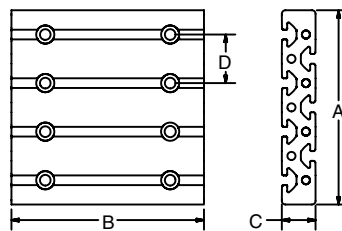
LR6 Series



LR14 Series



LR14HD Series



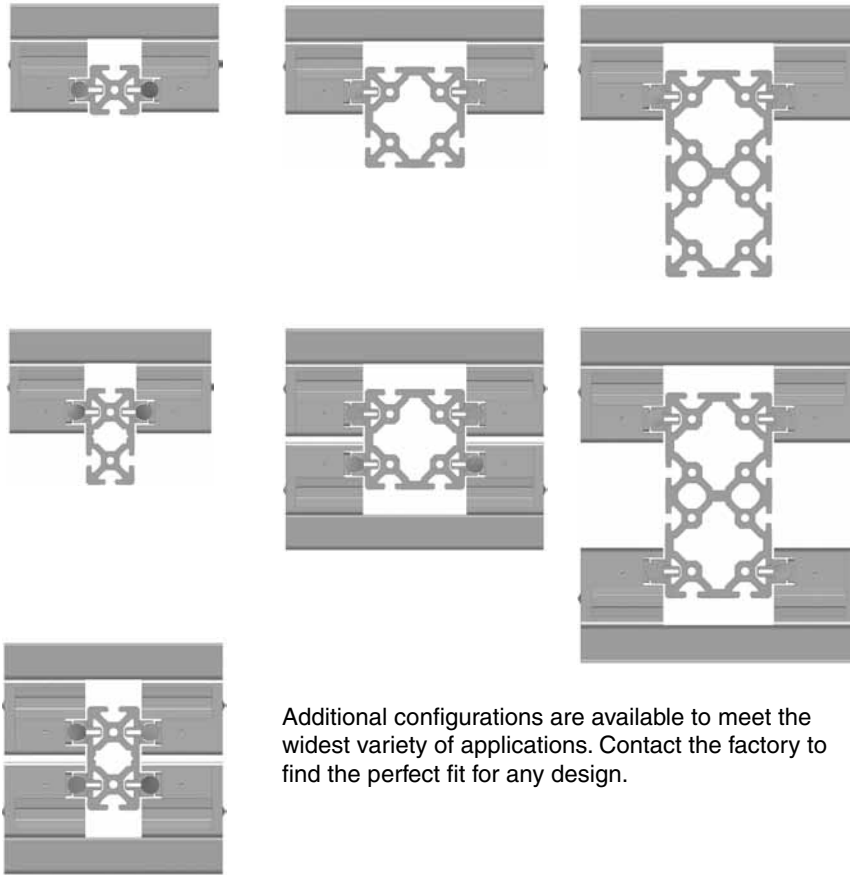
Consult Factory

LR25 Series

Consult Factory

Consult Factory

Carriage Information



Carriage Orientation

A variety of carriage orientations are available due to the LR Series' modular design.

Options include multiple linked and multiple independent carriages on a single actuator and custom carriage lengths.

Selecting the proper profile for load support, and configuring the carriage to suit the specific load and application provides the benefits of a custom product without the additional costs and lead times.

Additional configurations are available to meet the widest variety of applications. Contact the factory to find the perfect fit for any design.

Inertia Values

Linear Inertia (oz-in²) vs Stroke (mm)

Series	100	200	300	500	750	1000	1500	3000	4000	6000
6	25.87	26.12	26.38	26.89	27.53	28.17	29.45	33.29	35.85	40.96
14	63.95	64.20	64.46	64.97	65.61	66.25	67.53	71.37	73.93	79.04
14HD	73.09	73.35	73.60	74.12	74.76	75.40	76.68	80.51	83.07	88.19
25	293.45	293.71	293.96	294.48	295.12	295.76	297.04	300.87	303.43	308.55

Linear Inertia (kg-cm²) vs Stroke (mm)

Series	100	200	300	500	750	1000	1500	3000	4000	6000
6	4.73	4.78	4.82	4.92	5.04	5.15	5.39	6.09	6.56	7.49
14	11.70	11.74	11.79	11.88	12.00	12.12	12.35	13.05	13.52	14.46
14HD	13.37	13.42	13.46	13.56	13.67	13.79	14.02	14.73	15.19	16.13
25	53.67	53.72	53.77	53.86	53.98	54.09	54.33	55.03	55.50	56.43

Data calculated using a Reversing Unit 40 & Double Bearing Carriage

Choosing Profiles

Deflection Calculation

Parker IPS structural profiles are the foundation of the LR Series, providing unmatched flexibility and allowing for seamless integration of motion and structure. After selecting the LR Series type for appropriate carriage load capacity, the following formula will identify the profile configuration that is best suited for the application.

Deflection formula for length supported at both ends:

$$f = \frac{F * L^3}{48 E * I * 10^4}$$

Where:

f = deflection in mm

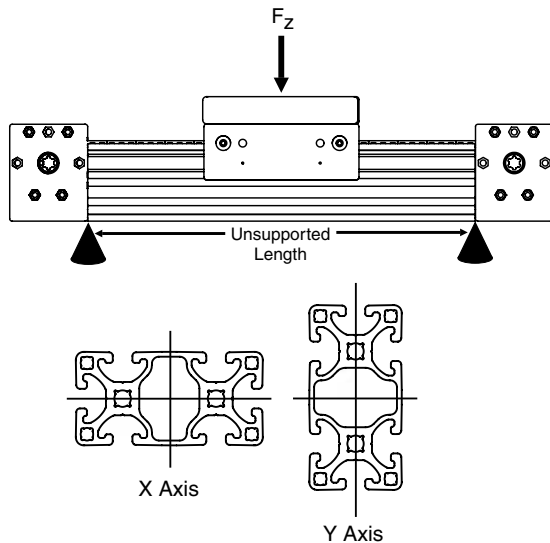
F = load in N

L = free profile length in mm

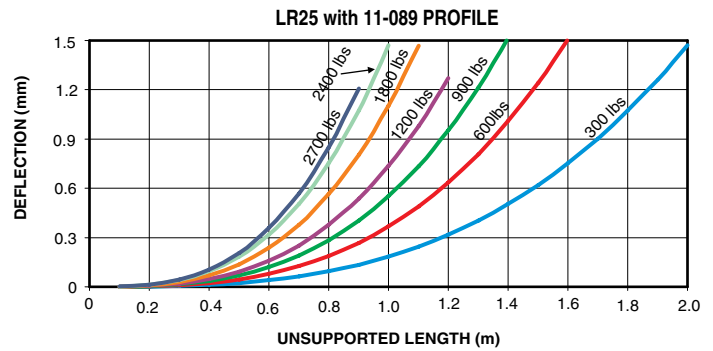
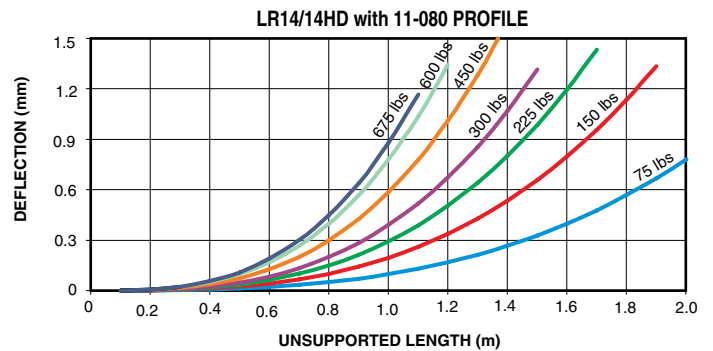
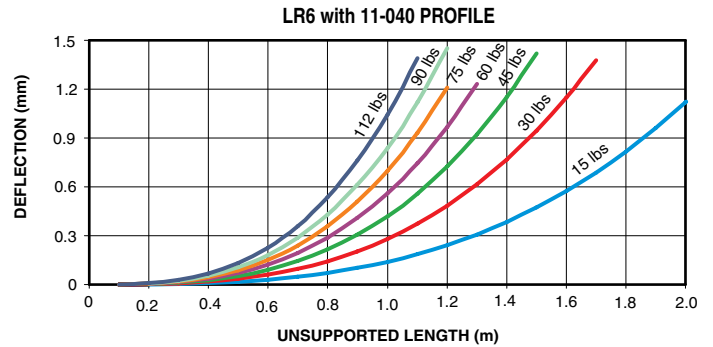
E = Modulus of Elasticity in N/mm²

$$E_{AL} = 70,000 \text{ N/mm}^2$$

I = Moment of inertia in cm⁴



Deflection at Various Loads



Profile Type	Series Compatibility			Moment of Inertia		Section Modulus	
	6	14/14hd	25	I_x [cm ⁴]	I_y [cm ⁴]	W_x [cm ³]	W_y [cm ³]
40x40 Standard	X			9.46	9.46	4.73	4.73
40x40 Heavy	X			14.18	14.18	7.09	7.09
40x80 Standard	X	X		71.79	17.23	17.99	8.62
40x80 Heavy	X	X		102	26.73	25.5	13.37
80x80 Heavy		X	X	185.2	185.2	46.3	46.3
80x80 Extra Heavy		X	X	215.85	215.85	53.96	53.96
80x160 Standard		X	X	922.5	271.1	115.3	67.8
80x160 Heavy		X	X	1106.92	343.37	138.37	85.84

Additional configurations are available for specific applications.

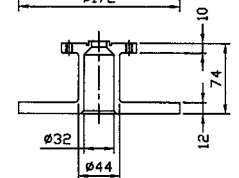
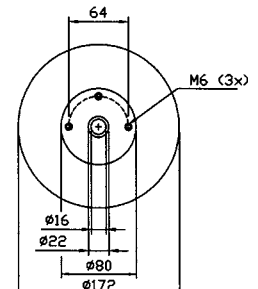
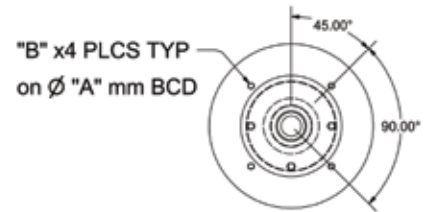
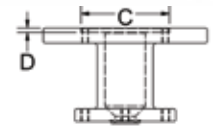


Motor/Gearbox Mounting

LR Series offers effortless motor and gearbox mounting and can accommodate a wide range of Servo and AC motors up to NEMA 56C as well as gearboxes. Connections are made using an Adapter Flange and Shaft.

These coupling components are available in preconfigured styles or as machinable blanks to accommodate connections not listed in the Motor/Gearbox Quick Selector on the following pages.

Motor/Gearbox Mounting

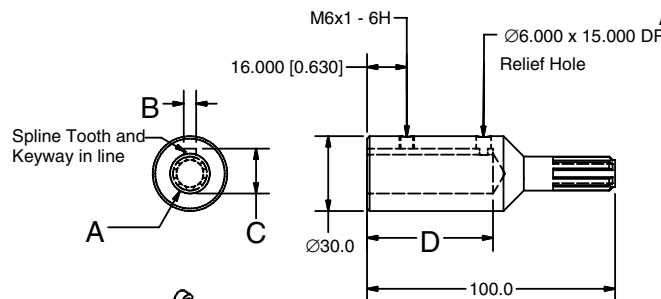


Flange Part # Code	Bolt Circle "A"	Bolt Size "B"	Pilot Diameter "C"	Pilot Depth "D"	P/N
A	98.40	M5	73.02	3.5	31-014AD
B	66.70	M4	38.10	2.0	31-014B
C	75.00	M5	60.00	3.0	31-014C
D	98.40	M6	73.02	3.5	31-014AD
E	100.00	M6	80.00	4.0	31-014E
F	70.00	M4	50.00	3.5	31-014F
G	90.00	M5	70.00	3.5	31-014G
Blank	-	-	-	-	31-014

Adapter Shaft Type	Shaft Diameter (in/mm) "A"	Key Width (mm) "B"	Shaft Height Over Key (mm) "C"	Shaft Diameter Depth (mm) "D"	P/N
A	0.375" (9.525)	2.39	10.60	50.80	31-001
B	0.433" (11)	4	12.50	50.80	31-002
C	0.500" (12.7)	3.18	14.22	50.80	31-003
D	0.551" (14)	5	16.00	50.80	31-004
E	0.625" (5.875)	4.76	18.00	50.80	31-005
F	0.630" (16)	5	18.00	50.80	31-006
Blank	-	-	-	-	31-010

Application

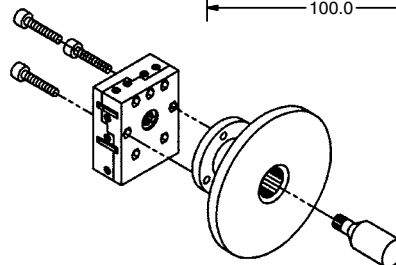
Adapter element between Reversing Unit 40 and various drive motors. Surface hardening permits machining for appropriate adapting configuration. For rigid connection of Reversing Units 40 in parallel, when distance between them exceeds 1m (3 ft).



Adapter Shaft

Application

Transition element for connecting drive motors to the Reversing Unit 40. Can be serviced to customer needs. Design accommodates hole pattern of NEMA motors up to size 56.



Universal Adapter Flange



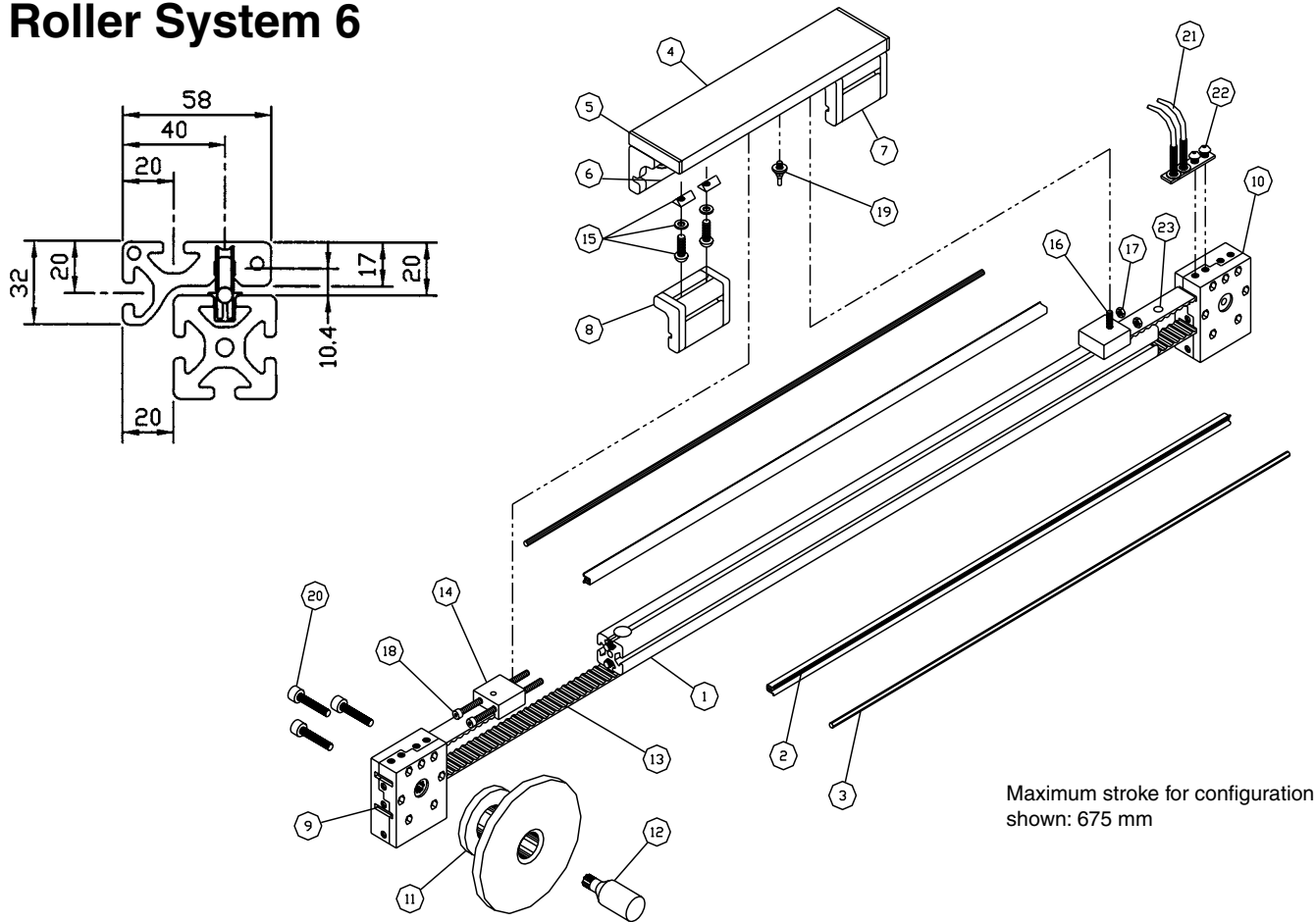
Motor/Gearbox Quick Selector

Manufacturer	Motor/Gearbox Model #	Adapter Flange	
		Code	Code
Allen-Bradley	1326Ax-B3, H-3xxx	D	E
	MPL-A45x, MPL-B45x	C	D
	MPL-x 310,320,330	E	E
	N-34xx	C	A
	Y-2xxx	D	F
AMP	HT34-486	C	A
Animatics	SM34xx	A	A
Baldor	All NEMA 48	C	-
	All NEMA 56	E	-
Bayside	PX34, RX34, NE34, NR34	C	A
ElectroCraft	N-34xx	C	A
	H-3xxx	D	E
Emerson	DXE208	A	B
	DXM-316, 340	D	E
	MGE 205, 208, 208CONS	A	B
	MGE-316, DXE-316	C	A
	MGM-340	D	E
	NTE-212-x, NTE-207-x	A	B
	NTE-3xx	C	A
GE Fanuc	STM13xx	C	A
Giddings & Lewis	HSM 307, 320	D	E
	NSM34xx	C	A
	YSM2xx	D	F
IDC	BN 31, 32	A	A
	P33x	E	A
Kollmorgen	MT(x)302 (NEMA 34)	A	A
	MT(x)304 (NEMA 34)	A	A
	MT(x)308 (NEMA 34)	C	A
	MTx 306, 308 (NEMA 100)	D	E
	MTx306 (NEMA-34)	C	A
MCG	AB34x	C	A
	ID34004	C	A
Mitsubishi	HC-KFS23(B), MF(S)23(B)	D	F
	HC-KFS43(B), MF(S)43(B)	D	F
	HC-PQ23, HC-PQ43	D	F
Motion Solutions	SLM075	E	A
MRV	MRV 31, 32, 33	C	A
Omron	R88M-U40030x	D	F
	R88M-W20030, R88M-W40030	D	F
	R88M-WP4xxx	D	G

Manufacturer	Motor/Gearbox Model #	Adapter Flange	
		Code	Code
Pacific Scientific	H3xNR	A	A
	N31HR, N32HR	C	A
	N33HR, N33HR	C	A
	R30 (English & Metric)	C	A
	R30P (Metric)	C	A
Parker	APEX 603 ,605 ,606 ,610	D	E
	BE23x	A	B
	SM/SE 231, 232, 233 - L	A	B
	BE34x	C	A
	ES3xB	A	A
	J034x, N034x	C	A
	J092x, N092x, HDY92, HDX92	D	E
	MPM89x***6***	C	A
	MPM89x***7***	D	E
	MPP092x	E	E
	OEM-83-xxx, QM83	A	A
	PTN060	D	H
	RS 31, 32, 33	A	A
	S, SX, SXF 83	A	A
	SMN082	D	E
	TS 31, 32	C	A
	TS33	E	A
VS31, VS32	C	D	
ZETA83	A	A	
QuickSilver	QCI-34H-1, -2	C	A
	QCI-34H-3, -4	E	A
	QCI-34N-x	C	A
Slo-Syn	KML-09x, KMT-09x	C	A
Superior Electric	KML-09x, KMT-09x	C	A
Warner Electric	HIS35xx	C	A
	KML-09x, KMT-09x	C	A
Yaskawa	SGM-02, -03, -04	D	F
	SGMAH-02**F**	D	F
	SGMAH-04A**F**	D	F
	SGML-04A	D	F
	SGMP-02, -03, -04	D	G
	SGMPH-02, SGMP-02	D	G
	SGMPH-04A(B)	D	G

The adapter flange will accommodate motors through NEMA size 56. Additional mounting configurations are available. Contact Customer Service if your Motor or Gearbox is not listed.

Roller System 6



Maximum stroke for configuration shown: 675 mm

Note

Configuration shown: 80x16 plate with smooth top surface; bottom surface is tapped M8 for the limit stop and M6 for clamping block mount.

Alternative option: 80x16 plate with T-slots on top counterbored for M8 screws for attaching bearing units and clamping block; bottom of the plate is tapped M8 for the limit stop.

#	Description	Part #	Qty
1	40x40 Heavy Profile @ 1000mm	11-040	1
2	Shaft Clamp 6 @ 998mm	13-106	2
3	Linear Shaft 6 @ 998mm	13-505	2
4	80x16 Profile @ 300mm	10-081	1
5	End Cap 80x16	18-812	2
6	Single Bearing Unit 6 Centric	30-401	2
7	Single Bearing Unit 6 Eccentric	30-403	2
8	End Cap/Lubricating System 6	30-407	4
9	Reversing Unit 40 Spline	31-122	1
10	Reversing Unit 40 w/8mm Bore	31-124	1
11	Universal Adapter Flange	31-014	1
12	Adapter Shaft, Blank	31-010	1
13	Timing Belt 25T10 @ 2300mm	31-052-1	1
14	Clamping Block for Belt 25T10	31-030	2
15	Fastening Set for Bearing Units 6	20-007	4
16	M6x20 Socket Head Cap Screw	24-320-6	1
17	M6 Lock Nut	24-716-6	2
18	M6x120 Socket Head Cap Screw	24-3120-6	2
19	Limit Stop, Bi-Directional	31-038	1
20	M6x45 Socket Head Cap Screw	24-345-6	3
21	Proximity Switch	31-035	2
22	Mounting Plate for Proximity Switch	31-036	1
23	Exciter Cam	31-033	2

Roller System 6

Application

Components for constructing Roller System 6 for light duty applications

Technical Data

Linear Shaft: Cf53 high grade carbon steel (AISI 1050)

Precision ground to ISO h6 tolerance $+0_{-8} \mu\text{m}$

Roundness: $4 \mu\text{m}$

Parallelism: $5 \mu\text{m}/1000\text{mm}$

Surface quality: Ra $0.3 \mu\text{m}$ (Rz $1.6 \mu\text{m}$)

Hardness depth: minimum 0.4 mm

Surface hardness: 670 to 840 HV (RC 59 to 65)

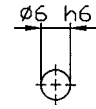
Shaft clamp: Al, anodized

Bearing Units: Aluminum anodized housing, Roller 6 (30-008), Bolt 6 Centric (30-006) or Eccentric (30-007), and M6x8 cone point set screw

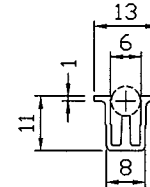
Preload range for eccentric bearing units $\pm 0.45 \text{ mm}$

End Cap/ Lubricating System (set of left and right): glass-filled nylon, black; includes felt, spring and M4x10 SHCS

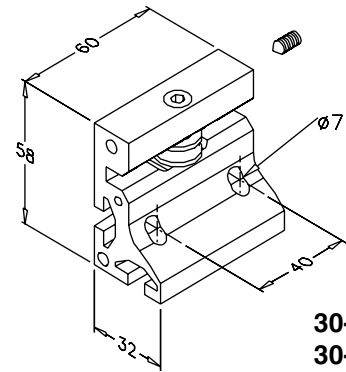
Fastening Set (one required per bearing unit): two M8x16 BHCS, two M8 T-slot nuts, and two M8 flat washers



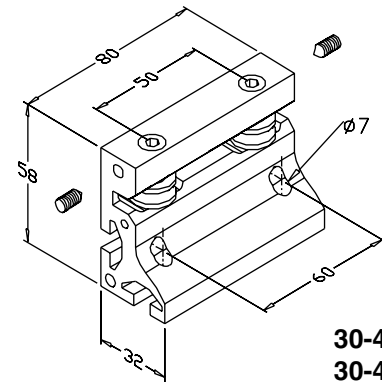
13-505



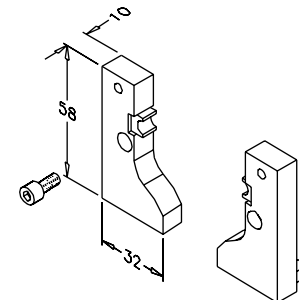
13-106



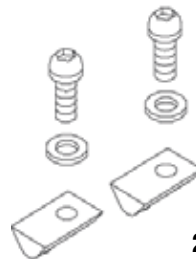
30-401
30-403



30-402
30-404



30-407



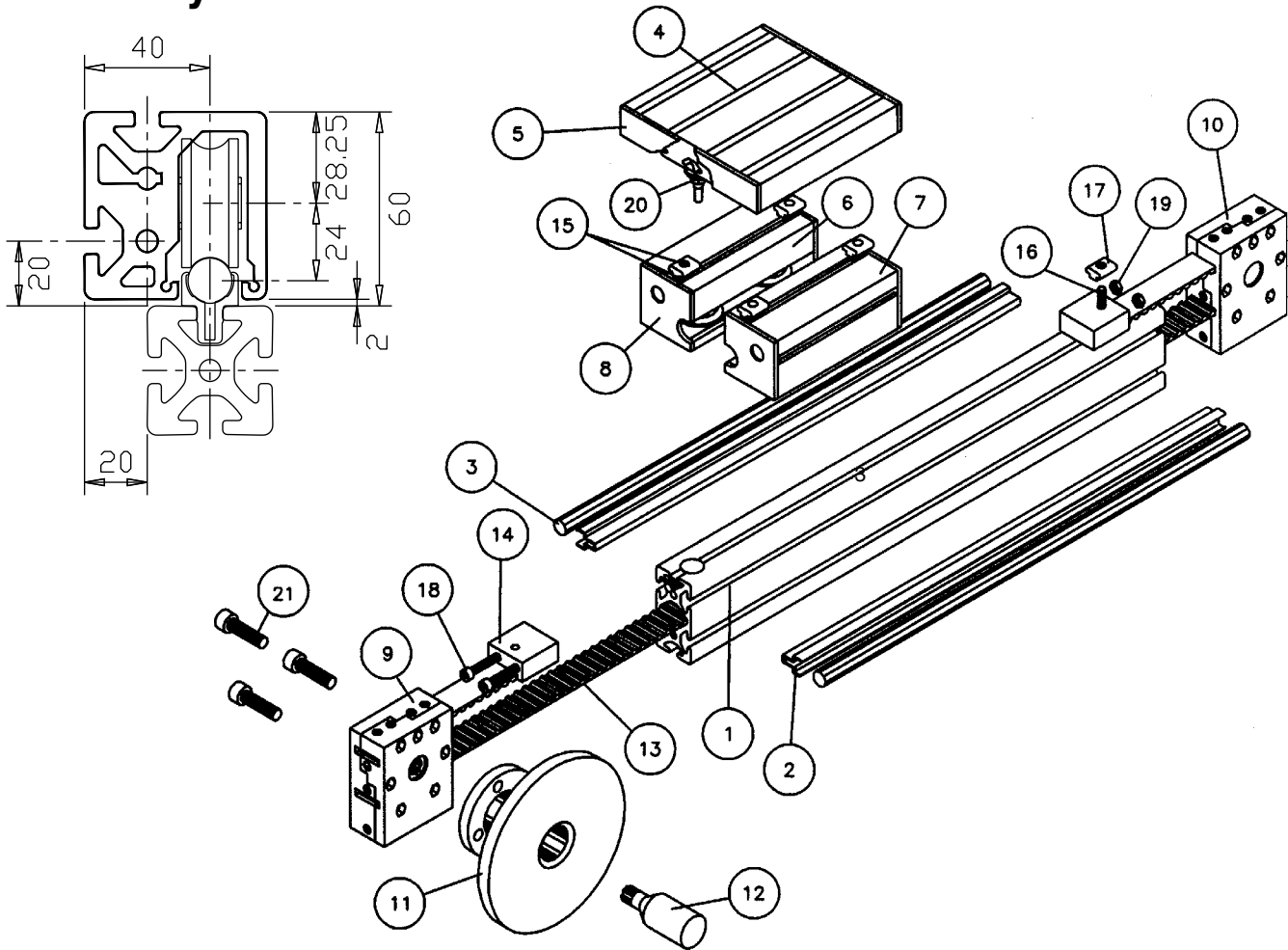
20-007

Ordering Information

Description	Unit	Weight	Part #
Linear Shaft 6, Hard Chrome Coated	per meter*	0.22 kg/m	13-505
Saw Cut for Linear Shaft			19-007
Shaft Clamp 6	per meter	0.12 kg/m	13-106
Saw Cut for Shaft Clamp			19-001
Single Bearing Unit 6, Centric	1 pc	0.18 kg	30-401
Single Bearing Unit 6, Eccentric	1 pc	0.18 kg	30-403
Double Bearing Unit 6, Centric	1 pc	0.22 kg	30-402
Double Bearing Unit 6, Eccentric	1 pc	0.22 kg	30-404
End Cap/ Lubricating System 6	1 set	20 g	30-407
Replacement Felt 6	1 pc		30-407Z5
Fastening Set for Bearing Unit 6	1 set	40 g	20-007

* Call for standard lengths in stock

Roller System 14



Maximum stroke for configuration shown:
 with limit stop (31-038) - 765 mm
 without limit stop - 850 mm

#	Description	Part #	Qty
1	80x40 Heavy Profile @ 1000mm	11-080	1
2	Shaft Clamp 14 @ 998mm	13-114	2
3	Linear Shaft 14 @ 998mm	13-514	2
4	160x28 Profile @ 140mm	11-128	1
5	End Cap 160x28	18-816	2
6	Double Bearing Unit 14 Eccentric	30-104	1
7	Double Bearing Unit 14 Centric	30-102	1
8	End Cap/Lubricating System 14	30-107	2
9	Reversing Unit 40 Spline	31-122	1
10	Reversing Unit 40 Idler	31-126	1
11	Universal Adapter Flange	31-014	1
12	Adapter Shaft, Blank	31-010	1
13	Timing Belt 25T10 @ 2300mm	31-052-1	1
14	Clamping Block for Belt 25T10	31-030	2
15	Fastening Set HD for Bearing Units	20-030	2
16	M6x20 Socket Head Cap Screw	24-320-6	1
17	HD T-Slot Nut St, M6	20-060	1
18	M6x120 Socket Head Cap Screw	24-3120-6	2
19	M6 Lock Nut	24-716-6	2
20	Limit Stop, Bi-Directional	31-038	1
21	M6x45 Socket Head Cap Screw	24-345-6	3

Roller System 14

Application

Components for constructing Roller System 14 for medium duty applications

Technical Data

Linear Shaft: Cf53 high grade carbon steel (AISI 1050)
 Precision ground to ISO h6 tolerance $^{+0}_{-11} \mu\text{m}$
 Roundness: $5 \mu\text{m}$
 Parallelism: $8 \mu\text{m}/1000\text{mm}$
 Surface quality: Ra $0.3 \mu\text{m}$ (Rz $1.6 \mu\text{m}$)
 Hardness depth: minimum 0.6 mm
 Surface hardness: 670 to 840 HV (RC 59 to 65)

Shaft Clamp: Al, anodized

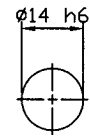
Bearing Units:

Al, anodized housing, Roller 14 (30-108),
 Bolt 14 Centric (30-105) or Eccentric (30-106), and spacer (30-108z1)

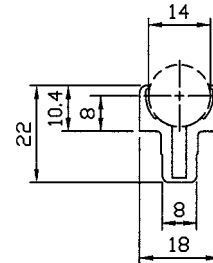
Preload range for eccentric bearing units $\pm 1.0 \text{ mm}$

End Cap/ Lubricating System (set of left and right):
 glass-filled nylon, black; includes felt, spring, M8x10 BHCS

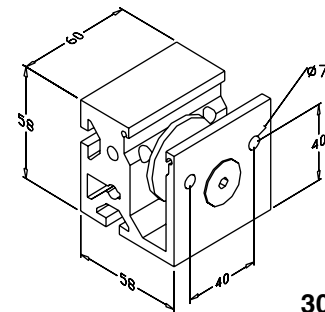
Fastening set (one required per bearing unit):
 two M8x18 BHCS, two M8 T-slot nuts HD, and two M8 safety spring washers



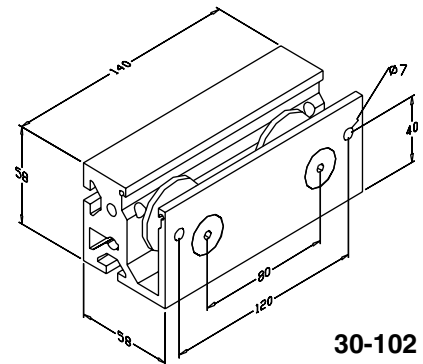
13-513



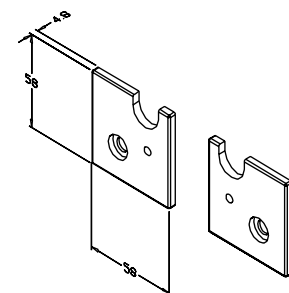
13-114



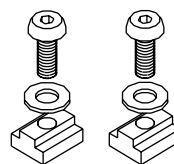
30-101
30-103



30-102
30-104



30-107



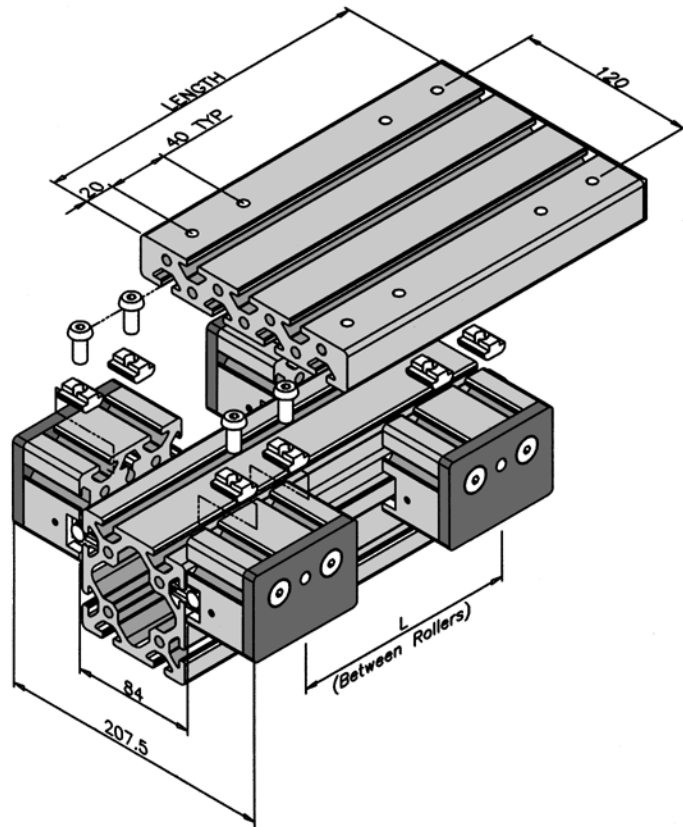
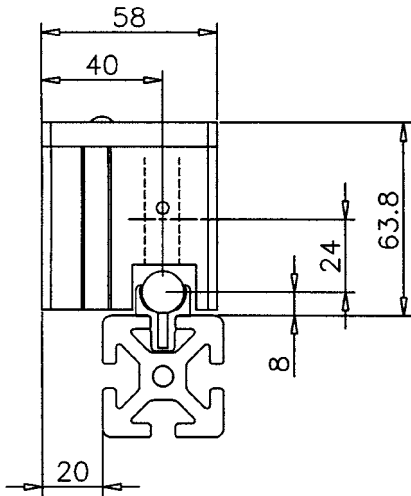
20-030

Ordering Information

Description	Unit	Weight	Part #
Linear Shaft 14, (Hard chrome coated)	per meter*	1.21 kg/m	13-513
Saw Cut for Linear Shaft			19-007
Shaft Clamp 14	per meter	0.26 kg/m	13-114
Saw Cut for Shaft Clamp			19-001
Single Bearing Unit 14, Centric	1 pc	0.40 kg	30-101
Single Bearing Unit 14, Eccentric	1 pc	0.40 kg	30-103
Double Bearing Unit 14, Centric	1 pc	0.88 kg	30-102
Double Bearing Unit 14, Eccentric	1 pc	0.88 kg	30-104
End Cap/ Lubricating System 14	1 set	50 g	30-107
Replacement Felt 14	1 pc		30-107z1
Fastening Set HD for Bearing Unit	1 set	40 g	20-030

* Call for standard lengths in stock

Roller System 14 HD



Single Bearing Units 14HD on 80x80 Profile

Carriage Plate: Length = $L + 80$

(T-slots parallel to 80x80 rail)

Recommended hardware: four fastening sets HD for bearing units (20-030). Required machining - eight access holes through 160x28 profile.

Required tools for assembly of Roller System 14HD:
5mm hexagon wrench (40-014), spanner wrench (40-032-14)

Roller System 14 HD

Application

Components for constructing Roller System 14 HD for medium and heavy duty applications

Technical Data

Linear Shaft: Cf53 high grade carbon steel (AISI 1050)

Precision ground to ISO h6 tolerance $^{+0}_{-11} \mu\text{m}$

Roundness: $5 \mu\text{m}$

Parallelism: $8 \mu\text{m}/1000\text{mm}$

Surface quality: Ra $0.3 \mu\text{m}$ (Rz $1.6 \mu\text{m}$)

Hardness depth: minimum 0.6 mm

Surface hardness: 670 to 840 HV (RC 59 to 65)

Shaft Clamp: Al, anodized

Bearing Units:

Al, anodized housing, Roller 14 (30-108),

Bolt 14 Centric (30-105) or Eccentric (30-106),

one spacer per roller (30-114z3), M8x12 nylon tipped set screw (24-689) for eccentric only, End Cap/ Lubricating System

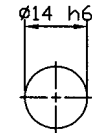
Preload range for eccentric bearing units $\pm 1.0 \text{ mm}$

End Cap/ Lubricating System: Trespa cap with pin, felt, spring, M8x10 BHCS, M4x10 set screw, and access plug

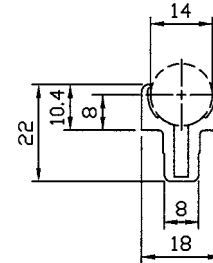
Ordering Information

Description	Unit	Weight	Part #
Linear Shaft 14, Hard Chrome Coated	per meter*	1.21 kg/m	13-513
Saw Cut for Linear Shaft			19-007
Shaft Clamp 14	per meter	0.25 kg/m	13-114
Saw Cut for Shaft Clamp			19-001
Single Bearing Unit 14 HD, Centric	1 pc	0.58 kg	30-111
Single Bearing Unit 14 HD, Eccentric	1 pc	0.58 kg	30-113
End Cap, LR14 HD, Single	1 pc		30-503z6
Replacement Felt 14HD	1 pc		30-114z5

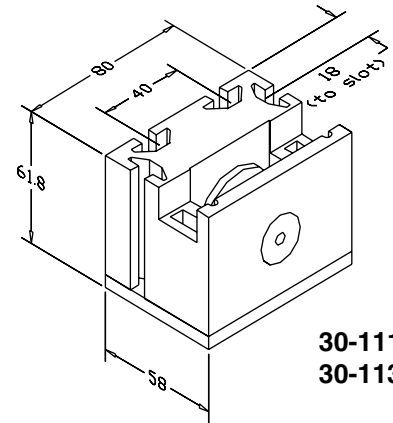
* Call for standard lengths in stock



13-513

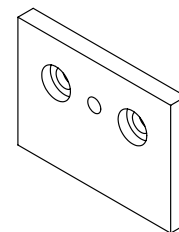


13-114



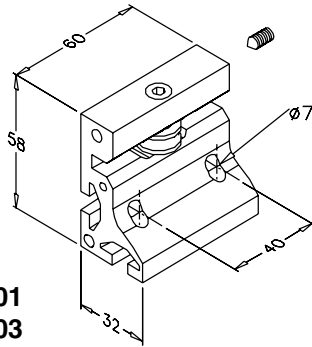
30-111
30-113

Note: T-slot on top are 40 series, on two sides are 28 series

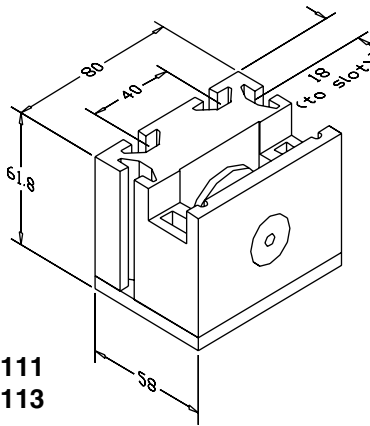


30-503z6

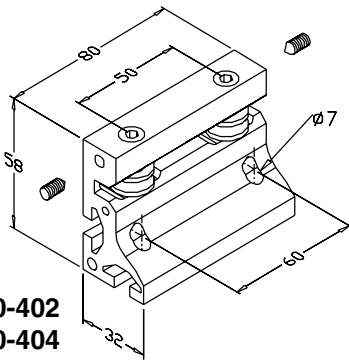
Bearing Unit



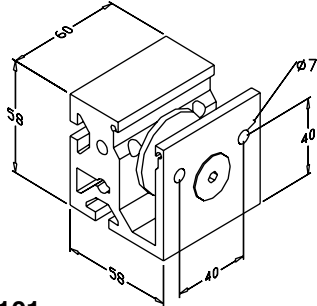
30-401
30-403



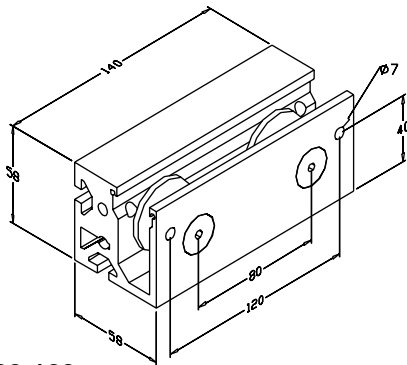
30-111
30-113



30-402
30-404



30-101
30-103



30-102
30-104

Ordering Information

Description	Unit	Weight (kg)	Part #
Bearing Unit, Double 6, Centric	each	0.22	30-402
Bearing Unit, Double 6, Eccentric	each	0.22	30-404
Bearing Unit, Single 6, Centric	each	0.18	30-401
Bearing Unit, Single 6, Eccentric	each	0.18	30-403
Bearing Unit, Double 14, Centric	each	0.88	30-102
Bearing Unit, Double 14, Eccentric	each	0.88	30-104
Bearing Unit, Single 14, Centric	each	0.40	30-101
Bearing Unit, Single 14, Eccentric	each	0.40	30-103
Bearing Unit, Single 14HD, Centric	each	0.58	30-111
Bearing Unit, Single 14HD, Eccentric	each	0.58	30-113

Technical Data

St, 100 Cr6, ground and hardened, double ball bearing with two shields, maintenance free

Ordering Information

Dimensions (mm)					Load (N)		Maximum RPM	Weight (g)	Part #
Shaft Dia	d2	a	b1	b2	Dynamic	Static			
6	5	10.5	8	7	1600	900	5000	7	30-008
14	12	24	20	18	10800	6400	2500	88	30-108

Technical Data

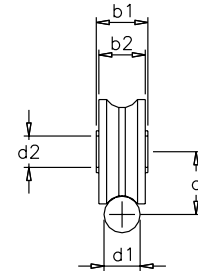
St, black oxide

Ordering Information

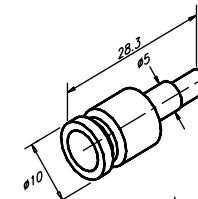
Type	Eccentricity (mm)	Used in Bearing Units	Weight (g)	Part #
6-Centric	N/A	30-401, 30-402	6	30-006
6-Eccentric	0.45	30-403, 30-404	6	30-007
14-Centric	N/A	30-101, 30-102, 30-111	48	30-105
14-Eccentric	1.0	30-103, 30-104, 30-113	46	30-106

Components for Bearing Units

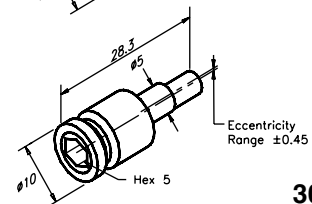
Track Rollers



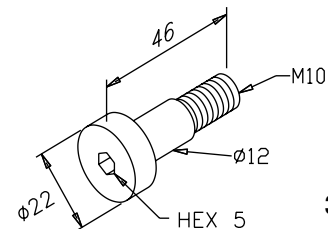
Bolts



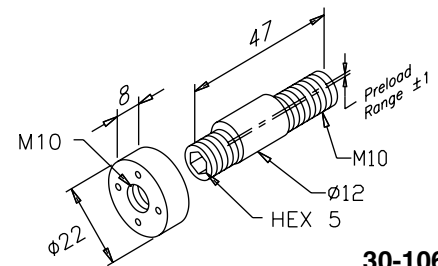
30-006



30-007



30-105



30-106

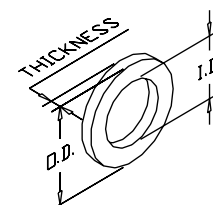
Technical Data

St, black oxide

Ordering Information

Dimensions (mm)			Used with	Qty Required per Roller	Part #
I.D.	O.D.	Thickness			
12	18	1.0	Bolt 14 Centric & Eccentric	1	30-108Z1
10.2	19	1.1	Bolt 14 HD Centric & Eccentric	1	30-114Z3

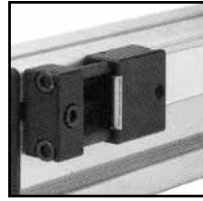
Spacers



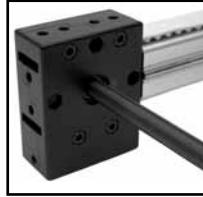
Linear Drive Components



1

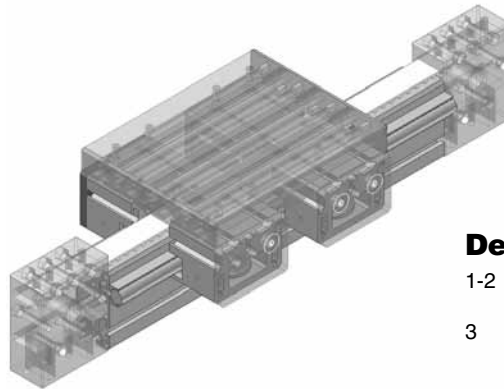


2



3

- 1 Timing Belt Reversing Unit 40 for driving or reversing the timing belt
- 2 Timing Belt Clamp and Tensioner
- 3 Multi-Spline Shaft

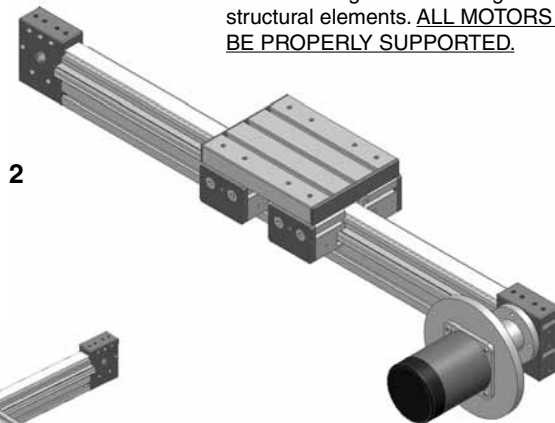


1

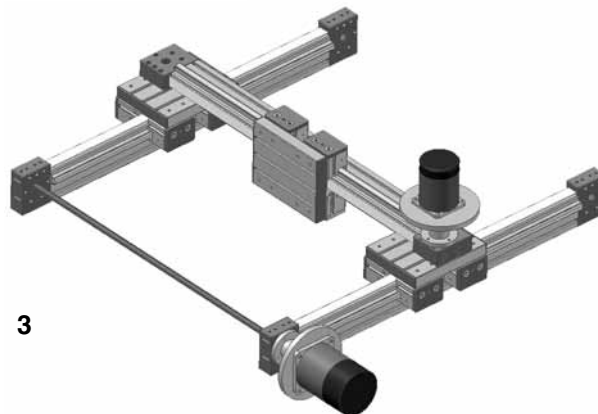
Design Examples

- 1-2 Construction with one axis of movement
- 3 Construction with two axes of movement.

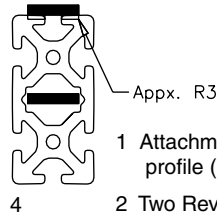
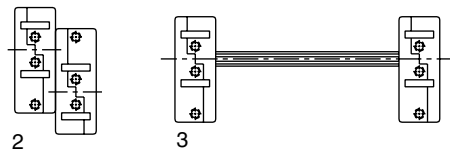
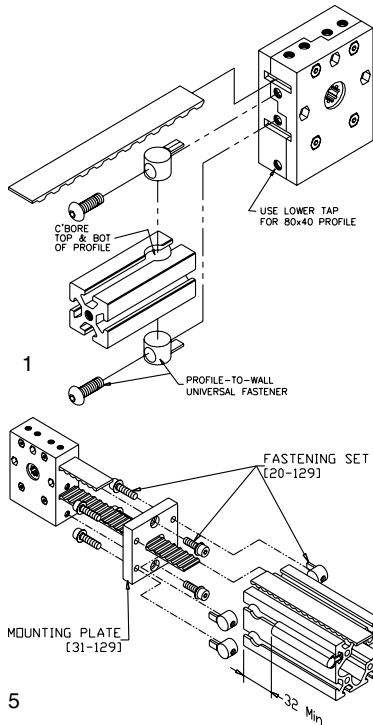
NOTE: Timing Belt Reversing Units are not structural elements. ALL MOTORS MUST BE PROPERLY SUPPORTED.



2

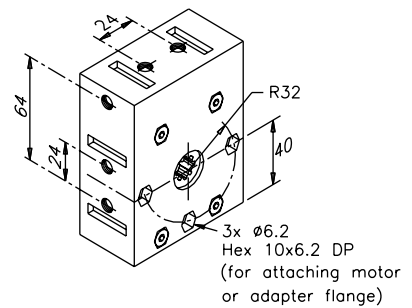
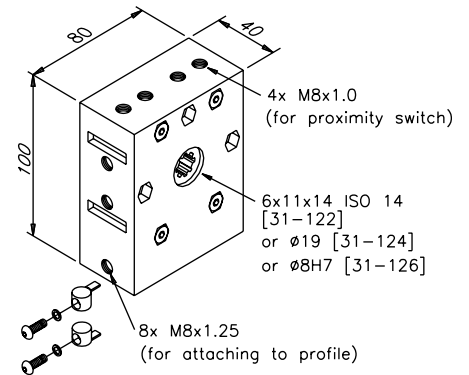


3



- 1 Attachment of Reversing Unit 40 to a profile (mounting hardware included).
- 2 Two Reversing Units 40 with belts running on opposite sides of 80x80 profile
- 3 Reversing Units 40 with a common spline connection
- 4 Top of profile needs a 3mm radius to prevent belt chatter
- 5 Mounting the Reversing Unit 40 to an 80x80 or 160x80 profile with the belt running on the 80mm side (requires mounting plate 31-129 and fastening set 20-129).

Reversing Unit 40

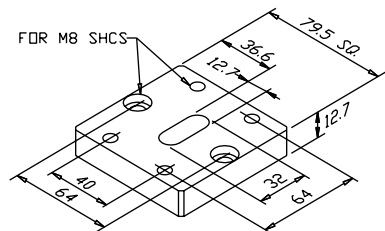


Application

To drive and reverse timing belt 25T10 for precise linear motion using profiles and linear guides. Choice of drive pulleys with spline 6x11x14mm ISO14 with Ø8^{H7} or Ø19. Pulley with 8mm bore can be drilled to max. Ø15mm. Housing accommodates attachment of drive motor adapter flange or serial connection of multiple reversing units. Reversing Unit 40 can be mounted to the end of profile directly or with Mounting Plate [31-129]. Mounting Plate is designed for center mount of Reversing Units 40 to end of 80x80 or 160x80 Profile with belt running on 80mm side.

Technical Data

Die cast zinc, black coated
 Pulley: St, black oxide, Pitch - 10 mm,
 Teeth - 15 (one revolution corresponds to 150mm), Pitch Dia. 47.75 mm
 Maximum load $M_D = 20 \text{ Nm}$ (14.7 ft-lb)
 Belt length inside reversing unit depends on type of connection:
 90° connection - 140 mm
 180° connection - 160 mm
 Complete with two Profile-to-Wall fasteners and ten access hole plugs.



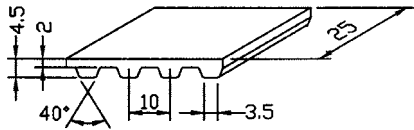
Mounting Plate 31-129:
 Al, anodized

31-129

Ordering Information

Description	Pulley	Unit	Weight	Part #
Reversing Unit 40	Spline	1 set	1.85 kg	31-122
	8mm Bore	1 set	1.85 kg	31-124
	Idler	1 set	1.85 kg	31-126
Mounting Plate, Rev. Unit 40		1 pc	0.40 kg	31-129
Fastening Set for Mounting Plate RU40		1 set		20-129
Pulley, 8mm Bore Reversing Unit 40		each		31-125
Pulley, Idler Reversing Unit 40		each		31-127
Pulley, Spline Reversing Unit 40		each		31-123

Hi-Flex Timing Belt



31-052-1

Application

Flexible, heavy duty transmission belt to convert the rotation of a drive motor into linear motion. Total length depends on profile length and amount of belt contained inside reversing unit. Pretensioning is determined by a the maximum operating peripheral force.

Technical Data

Polyurethane, steel reinforced

Maximum tensile load: 2,400 N

Temperature range: 0°C to +80°C

For two pulley drives pre-tension force:

$$F_v/0.5 F_u \text{ (} F_u \text{ - peripheral force)}$$

Pre-tension elongation (Δl) in mm per meter (L):

$$\frac{\Delta l}{L} = \frac{F_v}{600}$$

Ordering Information

Description

Hi-Flex Timing Belt 25T10

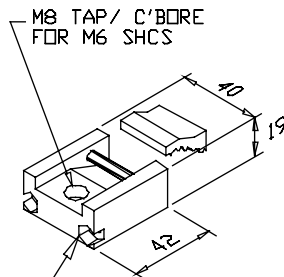
Unit

per meter, max. 50m

Part

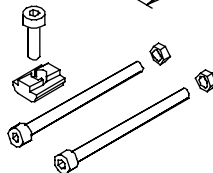
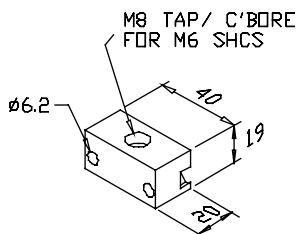
31-052-1

Clamping and Tensioning Blocks

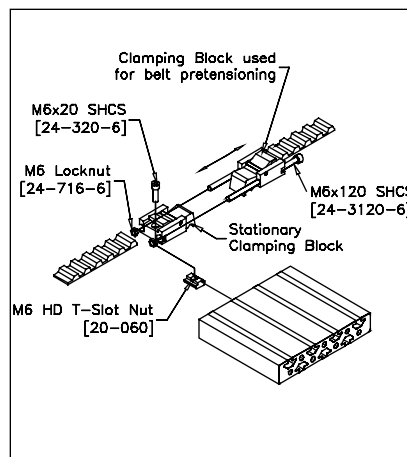


For M6 Hex Nut

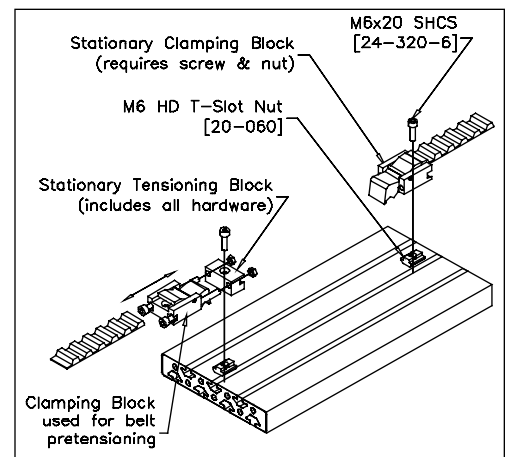
31-030



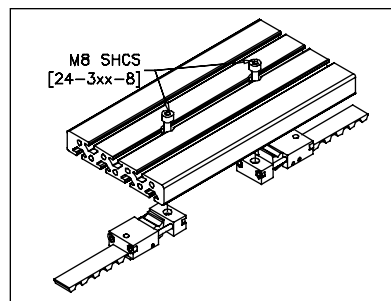
31-031



1



2



3

- 1 Two Clamping Blocks used for belt clamping and tensioning. Order all hardware separately.
- 2 Two Clamping Blocks and one Tensioner used for belt tensioning. Used when design does not permit the belt ends to come close. Tensioning block includes all hardware. Order screw and T-nut separately for attaching stationary clamping block (on the right).
- 3 Using two Clamping Blocks and two Tensioners is recommended for long linears (over 3.5 M) to allow proper belt tensioning. Order M8 screws separately.

Application

For attaching timing belt to a carriage slide and providing tensioning adjustment. Each end of belt requires clamping block. Tensioning block may be used on one or both ends of the belt.

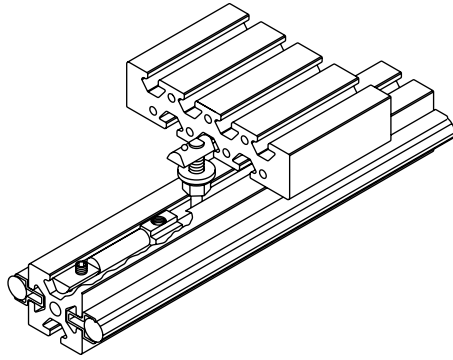
Technical Data

Al, black anodized

Tensioner includes: one M6x25 SHCS and one M6 T-slot Nut HD for attachment to base plate, two M6 lock nuts and two M6x80 SHCS.

Ordering Information

Description	Unit	Weight	Part #
Clamping Block, Belt 25T10	1 set	62 g	31-030
Tensioning Block	1 set	92 g	31-031



Limit Stop

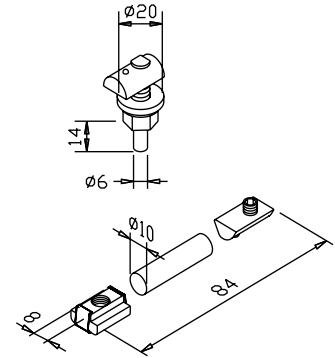
Application

To define mechanically the limits of travel. The rubber shock absorber provides for a cushioned end stop.

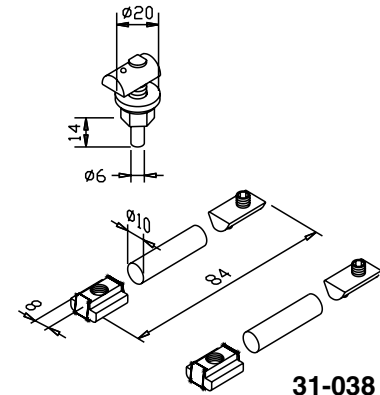
Technical Data

31-037:
 M8 T-slot nut HD w/retainer spring, M8x8 cup point set screw, rubber shock absorber, two M8 T-slot nuts, M8x44 set screw, M8 washer, M8 flange nut

31-038:
 two M8 T-slot nuts HD w/retainer spring, two M8x8 cup point set screws, two rubber shock absorbers, three M8 T-slot nuts, M8x44 set screw, M8 washer, M8 flange nut



31-037



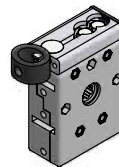
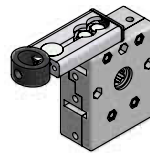
31-038

Ordering Information

Description	Unit	Weight	Part #
Limit Stop - One Direction	1 set	65 g	31-037
Limit Stop Bi-Directional	1 set	93 g	31-038
Rubber Shock Absorber (40mm long) 31-037Z3A	each		

Application

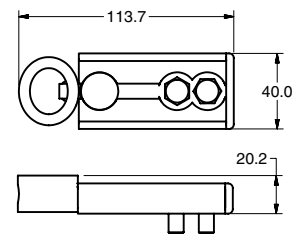
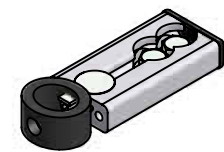
To mechanically limit the travel of a carriage. The rubber shock absorber provides for a cushioned end stop.



Bumpers

Technical Data

Bumper kit complete with all mounting hardware. Mounts directly to reversing unit.

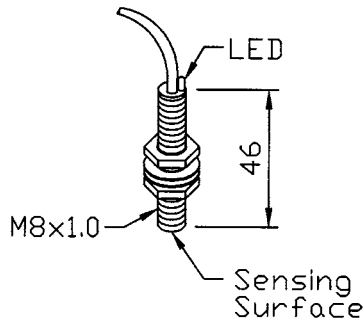


31-808

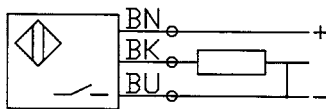
Ordering Information

Description	Unit	Weight	Part #
Bumper	1 Set	0.15 kg	31-808

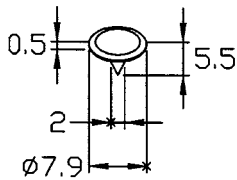
Proximity Switch



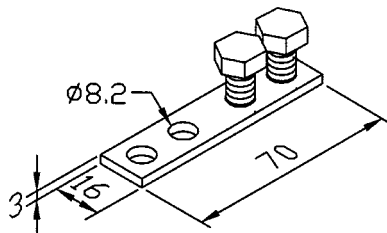
31-035



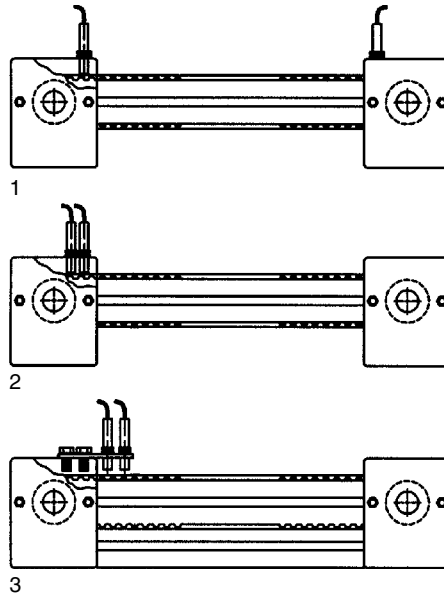
PNP Normally Open



31-033



31-036



- 1 Attachment of proximity switches when exciter does not run through reversing unit.
- 2 Attachment of both proximity switches for simplified control wiring installation on drive side of platform.
- 3 Attachment of both proximity switches on drive side of platform using mounting element [31-036].

Application

Proximity switches determine the limits of travel or provide reference positions. Exciter cams actuate inductive proximity switch, pressed into the flat surface of the timing belt. Mounting element provides attachment of proximity switches on reversing unit 40.

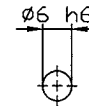
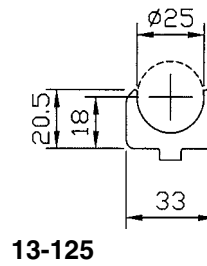
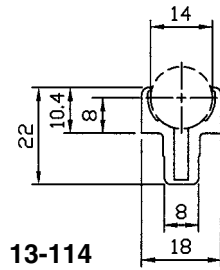
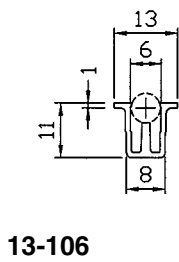
Technical Data

Inductive proximity switch in PNP sequence with LED indicator.
 Maximum sensing distance: 1.5 mm
 Output function: Normally Open
 Supply voltage: 10-30 VDC
 Includes two lock washers (must be used) and two hex nuts
 Exciter Cam: St, black
 Mounting Element: St, zinc plated
 Includes two hex bolts M8x1x16 [31-036z2]

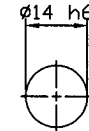
Ordering Information

Description	Unit	Weight	Part #
Proximity Switch	1 pc	65 g	31-035
Exciter Cam	1 pc	1 g	31-033
Mounting Element for Proximity Switch	1 set	43 g	31-036

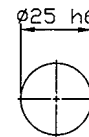
Shafts & Clamp



13-505



13-513



13-524

Ordering Information

Description	Unit	Weight	Part #
Shaft Clamp Profile 6	meter	0.12 kg	13-106*
Shaft Clamp Profile 14	meter	0.26 kg	13-114*
Shaft Clamp Profile 25	meter	1.01 kg	13-125*
Shaft Clamp Saw Cut To Length	each		19-001
Shaft Size 6	meter	0.22 kg	13-505**
Shaft Size 14	meter	1.21 kg	13-513**
Shaft Size 25	meter	3.83 kg	13-524**
Shaft Cut To Length	each		19-007

* Max Length = 3m
 ** Max Length = 6m

Application

To connect multiple reversing units 40 for generation of synchronous motion cycles such as required for gantry applications.

Technical Data

Cold drawn steel, 1045,
 6x11x14 ISO 14, DIN 5463
 Max. recommended length without bearing support: 500mm horiz.

Ordering Information

Description	Unit	Weight	Part #
LR Spline Shaft	per meter*	0.92kg/m	13-566
Saw cut necessary for cutt off			19-007

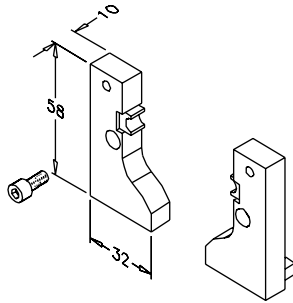
*Call for maximum lengths in stock

Spline Shaft

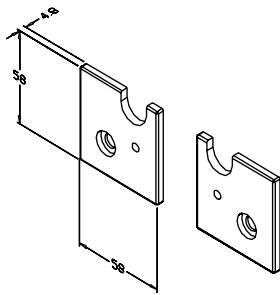


13-566

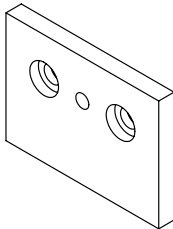
End Caps



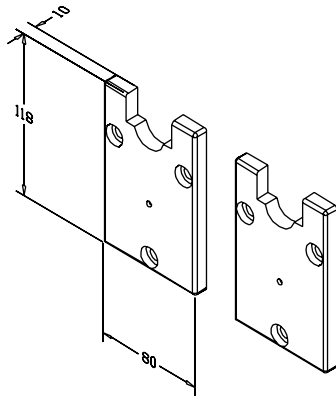
30-407



30-107



30-503z6



30-207

Ordering Information

Description	Unit	Weight	Part #
End Cap, Lubricating System 6	set (R&L)	0.02 kg	30-407
End Cap, Lubricating System 14	set (R&L)	0.05 kg	30-107
End Cap, Lubricating System 14 HD			30-503z6
End Cap, Lubricating System 25	set (R&L)		30-207
Replacement Felt Insert 6	each		30-407z5
Replacement Felt Insert 14	each		30-107z1
Replacement Felt Insert 14HD	each		30-114z5
Replacement Felt Insert 25	each		30-207z1

Section 9

Services, Assembly Tips & Tools

Description	Unit	Part #
Saw cut up to 80x40mm or 3" x 1.5" size profiles	per cut	19-001
Saw cut up to 80x80mm or 3" x 3" size profiles	per cut	19-002
Saw cut, 160x28 thru 160x80 or 6" x 1.5" profiles	per cut	19-003
Drill and Counter Bore for BHCS or SHCS.....	each	19-004
Drill and Counter Sink for FHCS.....	each	19-006
Saw cut for Linear Shafts.....	each	19-007
Tap Profile End 5/16-18.....	each	19-009
Tap Profile End M8	each	19-010
Drill 7mm (0.277") Access Hole.....	each	19-011
Drill & Tap for M5, M6, M8, M10, #10-32, 1/4-20, 5/16-18, 3/8-16	each	19-012
Drill & Tap for M3 or M4	each	19-013
Drill and Tap M12, M16, 1/2-13, or 5/8-18	each	19-014
Step Drill for Universal Fastener (all profiles)	each	19-015
Drill and Tap M8 (5/16-18 x 1.5") for Knuckle Foot	each	19-016
Drill and Tap M10 (3/8-16 x 2") for Knuckle Foot	each	19-017
Service for dowel (securing Linear Shaft).....	each	19-019
Drill 22.5mm hole for 1/4-turn Handle.....	each	19-018
Drill 20mmx6mm (3/4" x 1/4") for Pneu. Universal Fastener	each	19-020
Drill 0.375" or 0.500" hole for Ball Plunger	each	19-022
Drill Through Hole for Side Mounting Knuckle Foot.....	each	19-023
Drill 7mm (0.277") Access Hole through 160mm (6") side	each	19-025
Panel – Packaging for secure transport.....	1 package.....	19-026
Panel – Drill thru panel up to 10mm (3/8") for screws	each	19-027
Panel – Chamfer Corner.....	each	19-029
Panel – Notch Corner.....	each	19-030
Panel – Special Service Cut.....	each	19-031
Panel – Cut to Size	each	19-032
Mill Square up to 80x40 (3" x 1.5")	per end.....	19-100
Mill Square up to 80x80 (3" x 3").....	per end.....	19-101
Mill Square up to 160x80 (6" x 1.5").....	per end.....	19-102
Drill/Tap/Mill for Roller PA	each	19-103
Special Miter Cut	per cut	19-104
45° Miter Cut up to 80x80 (3" x 3").....	per cut	19-105
45° Miter Cut, 6" x 1.5" Profile.....	per cut	19-106
Miter Connection Counter Bore	each	19-211
Drill hole 8.4mm for Slide Block Brake	each	19-140

Processing Services

Saw Profile to Length

A cut to length extrusion profile can be ordered by specifying this machining service.

Tolerances: Length = ± 0.04 mm (± 0.015 in)
Squareness = ± 0.004 cm/cm (± 0.003 in/in)

Maximum Length*: 6000 mm (240 in) for all profiles, except as noted otherwise

Ordering Note:

Saw cut requirements should be described by specifying the machining service number and length of cut required, in millimeters or inches.

Example:

A project requires 4 pieces of the 80 x 80 profile, saw cut to a length of 1500 mm each. These profiles would be ordered as follows:

Line 1 – Specify the total quantity required:

Part No. = 10-088, Quantity = 4@1500mm

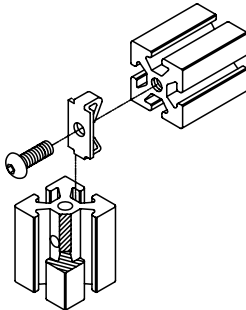
Line 2 – Specify machining services required:

Machining Service No. = 19-002

Quantity = 4

Tap Profile End

This machining service provides one or more tapped holes (M8, M10 or 5/16-18) at the end of an extrusion profile.



Ordering Note:

Profile end tapping requirements should be described by specifying the machining service number and the end(s) at which the tapped hole is required. See pages 233-234 for locator drawings of the extrusion ends.

Example:

A length of 11-040 profile requires tapping at each end for attachment of the M8 End Fastener Assembly. This machining service would be ordered as follows:

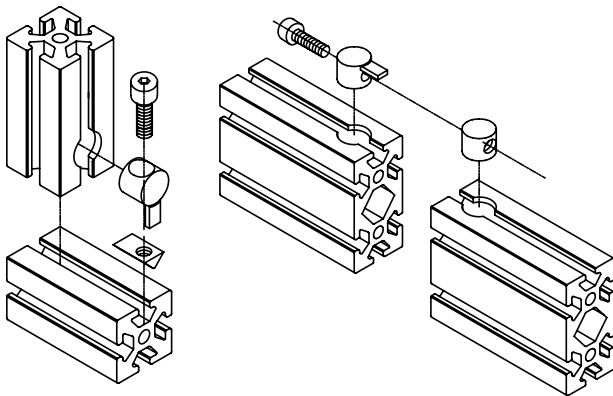
Machining Service No. = 19-010@A1, 19-010@A2

In this example, there would be charges for two profile end tapping services:

19-010, Quantity = 2

Step Drill

This service provides one or more blind holes on the profile T-slot. These holes can accommodate the Universal or Butt Fasteners for both metric or inch extrusions.



Ordering Note:

Profile step drill requirements should be described by specifying the machining service number and the end(s) at which the drill is required. See pages 233-234 for locator drawings of the extrusion ends.

Example:

Two lengths of 11-080 profile require Butt Fasteners to connect to each other. This machining service would be ordered as follows:

Machining Service No. = 19-015@A3, A6

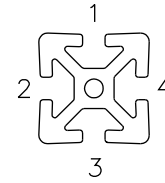
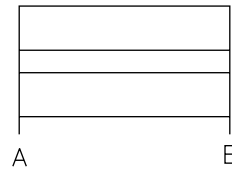
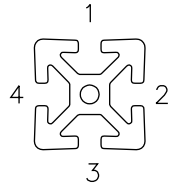
19-015@B3, B6

In this example, there would be charges for step drill services:

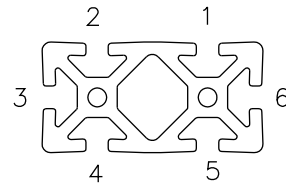
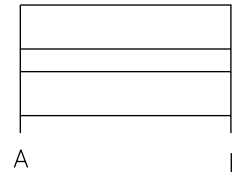
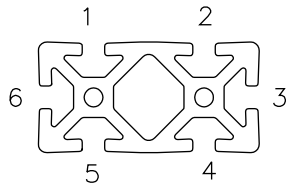
19-015, Quantity = 4

Surface Locations

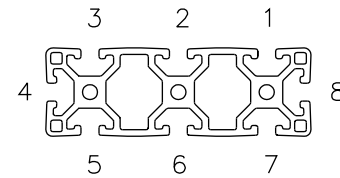
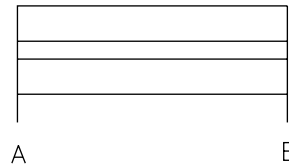
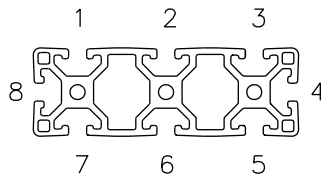
28 x 28 Profiles
 40 x 40 Profiles



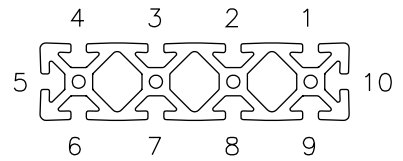
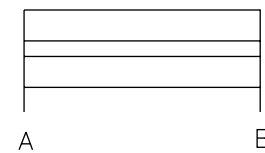
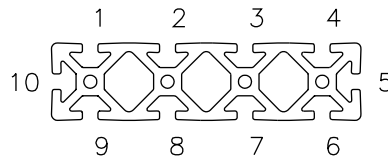
28 x 56 Profiles
 40 x 80 Profiles



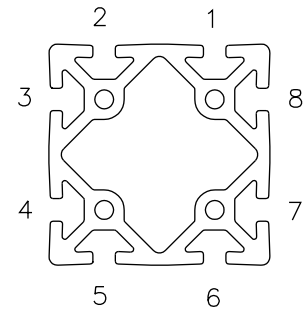
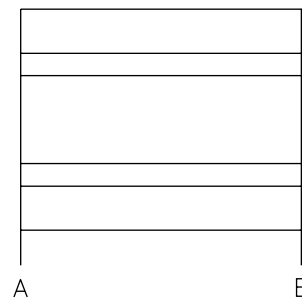
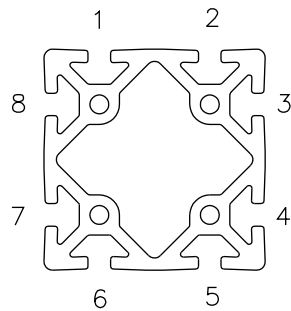
40 x 120 Profiles



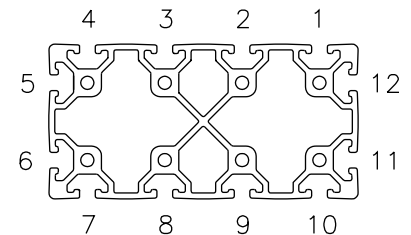
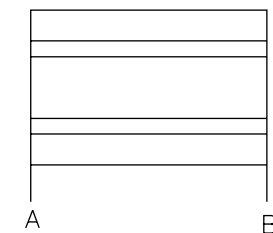
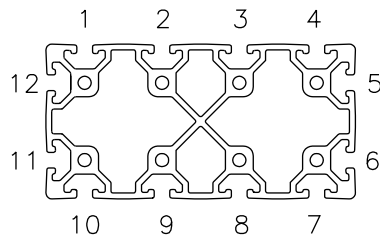
40 x 160 Profiles



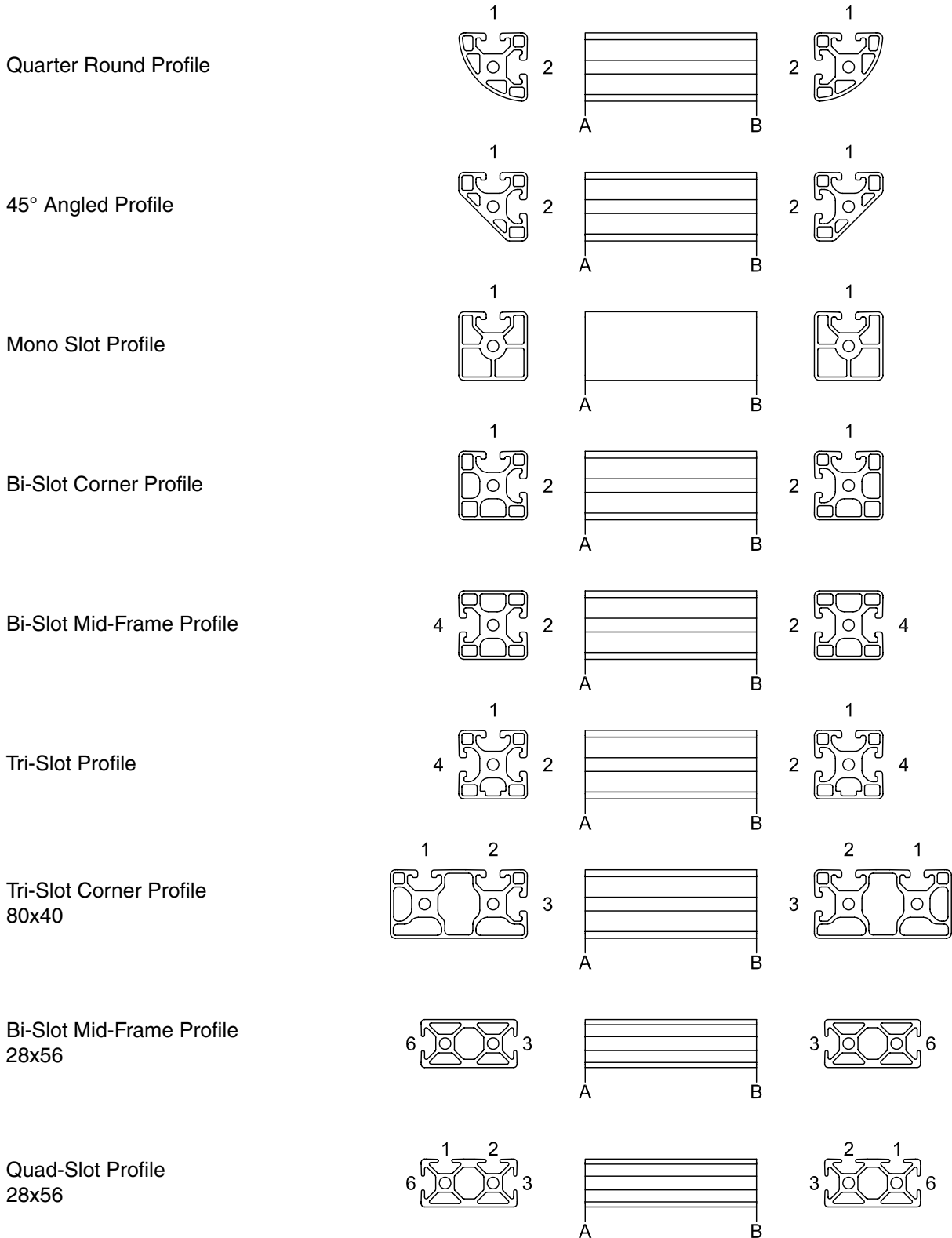
56 x 56 Profiles
 80 x 80 Profiles



80 x 160 Profiles



Surface Locations



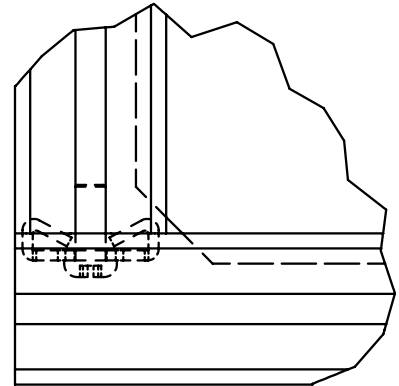
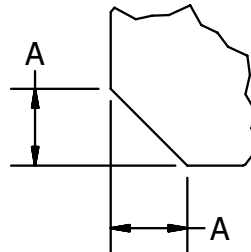
Chamfer Corner for End Fastener Clearance

Chamfer gives clearance for end fastener. This service is needed only when panels are installed in T-slots. Profiles 20 and 1" use 3mm thick panel with 3mm panel gasket.

Service 19-029

Dimensions

Profile	A
40	10.2 (0.400")
30	10.2 (0.400")
28	6.40 (0.250")
20	6.40 (0.250")
1.5"	10.2 (0.400")
1"	8.2 (0.325")



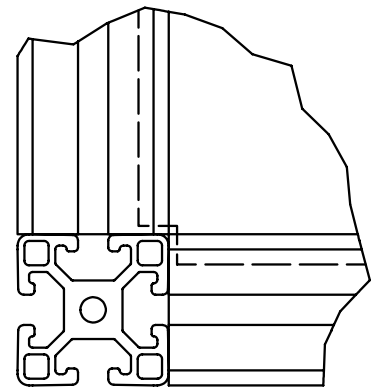
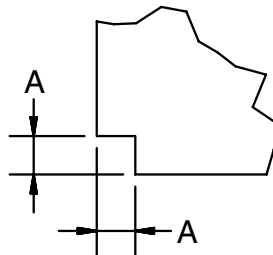
Notch Corner for Extrusion Clearance

Notch gives clearance for perpendicularly mounted extrusions. This service is needed only when panels are installed in T-slots. Profiles 20 and 1" use 3mm thick panel with 3mm panel gasket.

Service 19-030

Dimensions

Profile	A
40	10.2 (0.400")
30	10.2 (0.400")
28	6.40 (0.250")
20	6.40 (0.250")
1.5"	10.2 (0.400")
1"	8.2 (0.325")



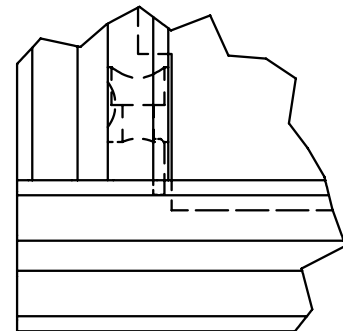
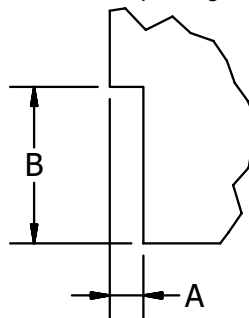
Notch Corner for Anchor Fastener Clearance

Notch gives clearance for anchor fastener. This service is needed only when panels are installed in T-slots. Profiles 1" use 3mm thick panel with 3mm panel gasket.

Service 19-031

Dimensions

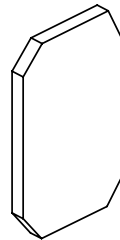
Profile	A	B
40	12.7 (0.500")	44.50 (1.750")
30	12.7 (0.500")	44.50 (1.750")
28	8.90 (0.350")	41.40 (1.630")
1.5"	12.7 (0.500")	44.50 (1.750")
1"	8.20 (0.325")	25.40 (1.000")



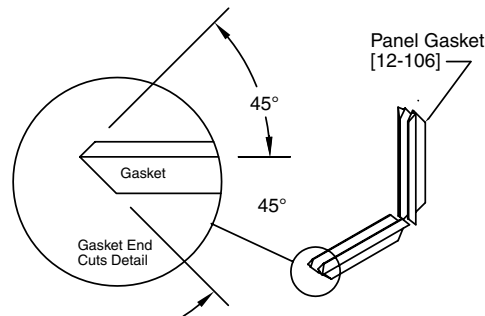
Pre-Assembly Instructions and Tips

1. Upon receipt of your order, check to see that you have received a complete kit with numbered components. All extrusions are clearly marked with a number designation. Sort all the extrusions according to these designations. If a drawing was supplied, these numbers will correspond with the numbers shown on the drawing and also with those on the bill of materials.
2. Assembly should be performed on a flat surface as this helps insure proper alignment and perpendicularity of the frame.
3. Thread all end fasteners into tapped ends of extrusions but do not tighten the bolts.
4. Pre-assemble all joiner plates, gussets, brackets, wire mesh clamps and anchor fastener assemblies but do not tighten the bolts.
5. If economy T-nuts are being used on joiner plates, gussets, brackets and any accessories which are to be mounted between end fastenings of the main assembly, then these systems of the T-nut should be installed in the proper T-slot at this time.
6. Install all wheels, leveling feet, hinges, handles and end caps after the main frame is constructed.
7. If solid panels are part of the installation, they should be installed in the T-slot after three sides of its frame have been formed. If panel gasket [12-106] is being used, it should be wrapped around the panel, notched at each corner and then slid into the extrusion's "u-shaped" frame.
8. Use a rubber mallet when installing panels and tap panels evenly to insure that they seat to depth within the T-slot.

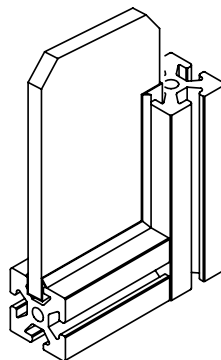
Panel and Gasket Cutting and Installation



Cut chamfers at panel corners that are adjacent to standard fasteners. Chamfer should be at 45° angle (approx.) and should be cut according to detail on page 235.



Measure the length of each side of the panel and cut the gasket to those lengths. Then cut each end of the gasket as shown above. Two 45° angle cuts will insure proper fit. Then slide the cut gasketing onto the side of the panel.



With the gasketing mounted on the panel, insert the panel into the slot of the extrusion. By loosening the standard fasteners that hold the extrusions together, the panel will be allowed to slide more freely into place. Gently tapping the extrusion into place and tightening the extrusions back together will insure a tight fitting panel.

Application

For precise location of 7mm access hole for standard connections.

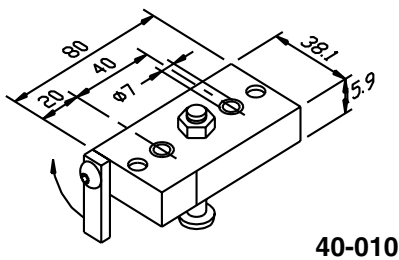
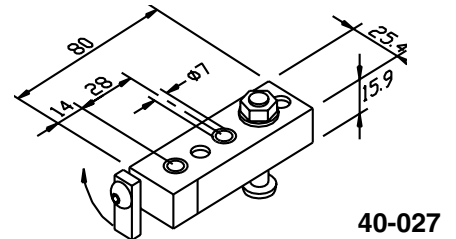
Technical Data

Al, anodized
Ground and hardened drill bushings with locations 28, 30 and 40mm between access holes. Clamping "T" bolt for firm attachment.

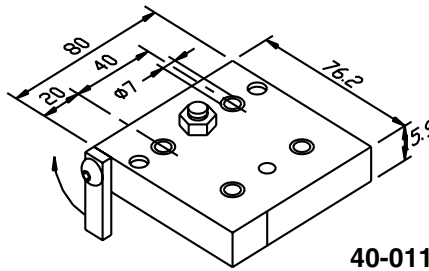
**Drilling Jigs
Std. Connection**

Ordering Information

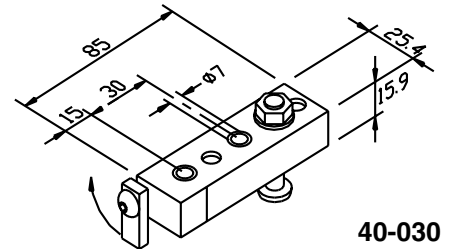
Description	Unit	Weight	Part #
Drilling Jig 40, Std. Connection	1 pc	0.19 kg	40-010
Drilling Jig 80, Std. Connection	1 pc	0.36 kg	40-011
Drilling Jig 28, Std. Connection	1 pc	0.12 kg	40-027
Drilling Jig 30, Std. Connection	1 pc		40-030



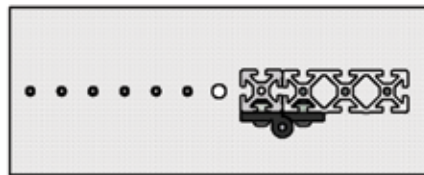
40-010



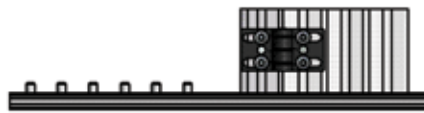
40-011



40-030



TOP VIEW



SIDE VIEW

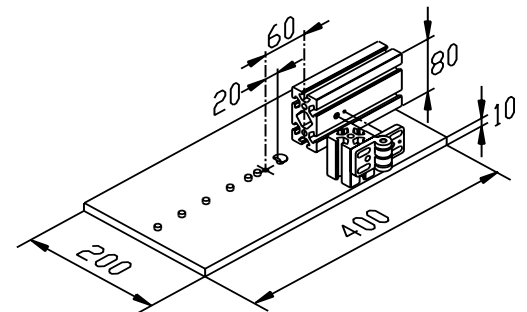
**Drilling Jig
Universal
Connection**

Application

For precise location of 20mm dia. step bore for the universal connection, and the 7mm access hole for the standard connection on a drill press.

Technical Data

Plastic base plate
Al, anodized stop block
Zn cast, black hinge



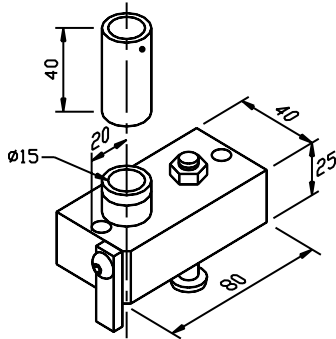
40-015

Ordering Information

Description	Unit	Weight	Part #
Drilling Jig 40, Univ. Connection	1 pc	2.35 kg	40-015



Drilling Jig Clamp Profile 40x40



40-026

Application

For precise location clearance hole and counter bore for M8 or 5/16-18" BHCS or SHCS on Clamp Profile 40x40.

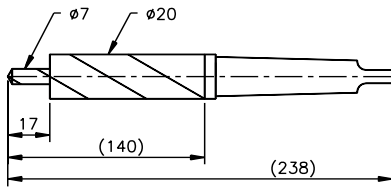
Technical Data

Al, anodized
Drill bushing hardened and polished.
Includes depth limit for step drill (40-025).

Ordering Information

Description	Unit	Weight	Part #
Drilling Jig, Clamp Profile 40x40	1 pc	0.49 kg	40-026

Step Drill 7x20 Univ. Connection



40-023

Application

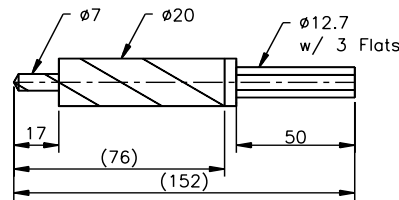
Used for drilling 20 mm diameter step bore for universal or butt fastener with 40, 30 or 28 series profiles.

Technical Data

High performance, high speed steel, nitrated. #2 Morse Taper or 0.5" dia. with three flats.

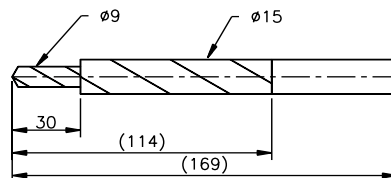
Ordering Information

Description	Unit	Weight	Part #
Step Drill 7x20, #2 Morse Taper	1 pc	0.26 kg	40-023
Step Drill 7x20 with 3 Flats	1 pc	0.19 kg	40-024



40-024

Step Drill 9x15



40-025

Application

Used for drilling and counter boring profile for M8 or 5/16-18" BHCS or SHCS.

Technical Data

High performance, high speed steel, nitrated. Straight shank.

Ordering Information

Description	Unit	Weight	Part #
Step Drill 9x15	1 pc	0.15 kg	40-025

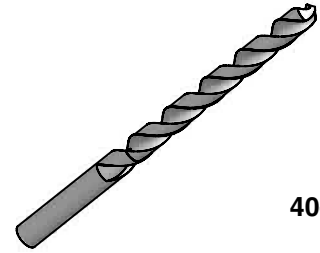
Application

Tap drill size for M8x1.25 and drill size for standard fastener access hole.

Technical Data

6.8mm drill, right hand, jobbers length
High speed steel

6.8mm Drill Bit



40-018

Ordering Information

Description	Unit	Weight	Part #
6.8mm Drill Bit	1 pc	20 g	40-018

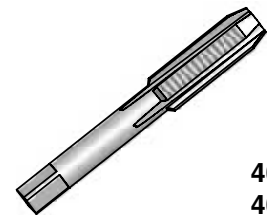
Application

Tooling to provide M8 tap in profile face holes for standard fastening set.

Technical Data

M8x1.25 tap, right hand
High speed steel

Tap



40-016

40-516

Ordering Information

Description	Unit	Weight	Part #
M8x1.25 Tap	1 pc	25 g	40-016
5/16-18 Tap	1 Pc	25 g	40-516

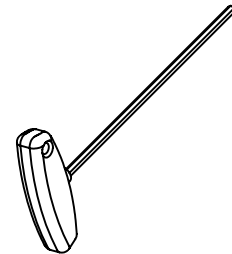
Application

For tightening of standard and universal connections.

Technical Data

Chrome vanadium steel, nickel plated
Acetate handle

T-Handle Wrench



40-012

40-044

40-046

Ordering Information

Description	Unit	Weight	Part #
Hex 5 Wrench with T-Handle	1 pc	26 g	40-012
3/16" Wrench with T-Handle	1 pc	26 g	40-044
1/4" Wrench with T-Handle	1 pc	26 g	40-046

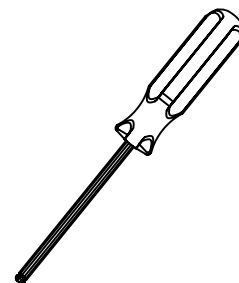
Application

For tightening of standard and universal connections.

Technical Data

Chrome vanadium steel, nickel plated
Plastic handle

Ball-Headed Wrench



40-013

40-022

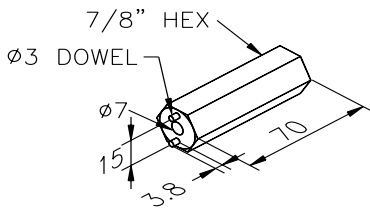
40-047

40-048

Ordering Information

Description	Unit	Weight	Part #
5mm Wrench with Ball Head	1 pc	50 g	40-013
6mm Wrench with Ball Head	1 pc	50 g	40-022
3/16" Wrench with Ball Head	1 pc	50 g	40-047
1/4" Wrench with Ball Head	1 pc	50 g	40-048

Spanner Wrenches



Application

Designed for tightening spanner nuts on linear guide systems 14 and 25.

Technical Data

St, black or brown finish tempered with spot welded pins

40-029: Al, black anodized

Steel pins

40-029



40-017



40-032-14



40-032-25

Description

Adj. Spanner Wrench for Linear 14

Pin Socket Wrench

Spanner Wrench for Linear 14

Spanner Wrench for Linear 25

Unit

1 pc

1 pc

1 pc

1 pc

Weight

0.11 kg

0.08 kg

0.04 kg

0.10 kg

Part

40-017

40-029

40-032-14

40-032-25

Part #	Description	Page #
10-016	16X40	24
10-036	Post 36X36	31
10-040	40X40 Standard	19
10-040B	40X40 Standard (Black)	19
10-043	40X40 Quarter Round ST	21
10-044	40x40-45 Degrees Standard	22
10-045	40X45 Degrees Standard	22
10-080	80X40 Standard	26
10-080B	80X40 Standard (Black)	26
10-081	16X80	24
10-083	R40X80 30 Degrees Standard	23
10-085	R40X80 45 Degrees Standard	23
10-086	R40X80 60 Degrees Standard	23
10-088	80X80 Standard	27
10-088B	80X80 Standard (Black)	27
10-089	R40X80 90 Degrees Standard	23
10-120	120x40 Standard	28
10-140	40X40 Bi-Slot Corner	20
10-1515	1.5"X1.5"	45
10-1530	1.5"X3.0"	48
10-1543	1.5"X1.5" Quarter Round	47
10-1560	1.5"X6.0"	50
10-1591	1.5"X1.5" Mono-Slot	46
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2. Payment: Payment shall be made by Buyer net 30 days from the date of delivery of the items purchased hereunder. Amounts not timely paid shall bear interest at the maximum rate permitted by law for each month or portion thereof that the Buyer is late in making payment. Any claims by Buyer for omissions or shortages in a shipment shall be waived unless Seller receives notice thereof within 30 days after Buyer's receipt of the shipment.

3. Delivery: Unless otherwise provided on the face hereof, delivery shall be made F.O.B. Seller's plant. Regardless of the method of delivery, however, risk of loss shall pass to Buyer upon Seller's delivery to a carrier. Any delivery dates shown are approximate only and Seller shall have no liability for any delays in delivery.

4. Warranty: Seller warrants that the items sold hereunder shall be free from defects in material or workmanship for a period of 24 months from date of shipment from Parker Hannifin Corporation. **THIS WARRANTY COMPRISES THE SOLE AND ENTIRE WARRANTY PERTAINING TO ITEMS PROVIDED HEREUNDER. SELLER MAKES NO OTHER WARRANTY, GUARANTEE, OR REPRESENTATION OF ANY KIND WHATSOEVER. ALL OTHER WARRANTIES, INCLUDING BUT NOT LIMITED TO, MERCHANTABILITY AND FITNESS FOR PURPOSE, WHETHER EXPRESS, IMPLIED, OR ARISING BY OPERATION OF LAW, TRADE USAGE, OR COURSE OF DEALING ARE HEREBY DISCLAIMED. NOTWITHSTANDING THE FOREGOING, THERE ARE NO WARRANTIES WHATSOEVER ON ITEMS BUILT OR ACQUIRED WHOLLY OR PARTIALLY, TO BUYER'S DESIGNS OR SPECIFICATIONS.**

5. Limitation of Remedy: SELLER'S LIABILITY ARISING FROM OR IN ANY WAY CONNECTED WITH THE ITEMS SOLD OR THIS CONTRACT SHALL BE LIMITED EXCLUSIVELY TO REPAIR OR REPLACEMENT OF THE ITEMS SOLD OR REFUND OF THE PURCHASE PRICE PAID BY BUYER, AT SELLER'S SOLE OPTION. IN NO EVENT SHALL SELLER BE LIABLE FOR ANY INCIDENTAL, CONSEQUENTIAL OR SPECIAL DAMAGES OF ANY KIND OR NATURE WHATSOEVER, INCLUDING BUT NOT LIMITED TO LOST PROFITS ARISING FROM OR IN ANY WAY CONNECTED WITH THIS AGREEMENT OR ITEMS SOLD HEREUNDER, WHETHER ALLEGED TO ARISE FROM BREACH OF CONTRACT, EXPRESS OR IMPLIED WARRANTY, OR IN TORT, INCLUDING WITHOUT LIMITATION, NEGLIGENCE, FAILURE TO WARN OR STRICT LIABILITY.

6. Changes, Reschedules and Cancellations: Buyers may request to modify the designs or specifications for the items sold hereunder as well as the quantities and delivery dates thereof, or may request to cancel all or part of this order, however, no such requested modification or cancellation shall become part of the contract between Buyer and Seller unless accepted by Seller in a written amendment to this Agreement. Acceptance of any such requested modification of cancellation shall be at Seller's discretion, and shall be upon such terms and conditions as Seller may require.

7. Special Tooling: A tooling charge may be imposed for any special tooling, including without limitation, dies, fixtures, molds and patterns, acquired to manufacture items sold pursuant to this contract. Such special tooling shall be and remain Seller's property notwithstanding payment of any charges by Buyer. In no event will Buyer acquire any interest in apparatus belonging to Seller which is utilized in the manufacture of the items sold hereunder, even if such apparatus has been specially converted or adapted for such manufacture and notwithstanding any charges paid by Buyer. Unless otherwise agreed, Seller shall have the right to alter, discard or otherwise dispose of any special tooling or other property in its sole discretion at any time.

8. Buyer's Property: Any designs, tools, patterns, materials, drawings, confidential information or equipment furnished by Buyer, or any other items which become Buyer's property, may be considered obsolete and may be destroyed by Seller after two (2) consecutive years have elapsed without Buyer placing an order for the items which are manufactured using such property. Seller shall not be responsible for any loss or damage to such property while it is in Seller's possession or control.

9. Taxes: Unless otherwise indicated on the face hereof, all prices and charges are exclusive of excise, sales, use, property, occupational or like taxes which may be imposed by any taxing authority upon the manufacture, sale or delivery of the items sold hereunder. If any such taxes must be paid by Seller or if Seller is liable for the collection of such tax, the amount thereof shall be in addition to the amounts for the items sold. Buyer agrees to pay all such taxes or to reimburse Seller therefore upon receipt of its invoice. If Buyer claims exemption from any sales, use or other tax imposed by any taxing authority, Buyer shall save Seller harmless from and against any such tax, together with any interest or penalties thereon which may be assessed if the items are held to be taxable.

10. Indemnity For Infringement of Intellectual Property Rights: Seller shall have no liability for infringement of any patents, trademarks, copyrights, trade dress, trade secrets or similar rights except as provided in this Part 10. Seller will defend and indemnify Buyer against allegations of infringement of U.S. patents, U.S. trademarks, copyrights, trade dress and trade secrets (hereinafter 'Intellectual Property Rights'). Seller will defend at its expense and will pay the cost of any settlement or damages awarded in an action brought against Buyer based on an allegation that an item sold pursuant to this contract infringes the Intellectual Property Rights of a third party. Seller's obligation to defend and indemnify Buyer is contingent on Buyer notifying Seller within ten (10) days after Buyer becomes aware of such allegations of infringement, and Seller having sole control over the defense of any allegations or actions including all negotiations for settlement or compromise. If an item sold hereunder is subject to a claim that it infringes the Intellectual Property Rights of a third party, Seller may, at its sole expense and option, procure for Buyer the right to continue using said item, replace or modify said item so as to make it noninfringing, or offer to accept return of said item and return the purchase price less a reasonable allowance for depreciation. Notwithstanding the foregoing, Seller shall have no liability for claims of infringement based on information provided by Buyer, or directed to items delivered hereunder for which the designs are specified in whole or part by Buyer, or infringements resulting from the modification, combination or use in a system of any item sold hereunder. The foregoing provisions of this Part 10 shall constitute Seller's sole and exclusive liability and Buyer's sole and exclusive remedy for infringement of Intellectual Property Right. If a claim is based on information provided by Buyer or if the design for an item delivered hereunder is specified in whole or in part by Buyer, Buyer shall defend and indemnify Seller for all costs, expenses or judgements resulting from any claim that such item infringes any patent, trademark, copyright, trade dress, trade secret or any similar right.

11. Force Majeure: Seller does not assume the risk of and shall not be liable for delay or failure to perform any of Seller's obligations by reason of circumstances beyond the reasonable control of Seller (hereinafter 'Events of Force Majeure'). Events of Force Majeure shall include without limitation, accidents, acts of God, strikes or labor disputes, acts, laws, rules or regulations of any government or government agency, fires, floods, delays or failures in delivery of carriers or suppliers, shortages of materials and any other cause beyond Seller's control.

12. Entire Agreement/Governing Law: The terms and conditions set forth herein, together with any amendments, modifications and any different terms or conditions expressly accepted by Seller in writing, shall constitute the entire Agreement concerning the items sold, and there are no oral or other representations or agreements which pertain thereto. This Agreement shall be governed in all respects by the law of the State of Ohio. No actions arising out of the sale of the items sold hereunder of this Agreement may be brought by either party more than two (2) years after the cause of action accrues.

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