



aerospace
climate control
electromechanical
filtration
fluid & gas handling
hydraulics
pneumatics
process control
sealing & shielding



Industrial Profile Systems

High-Strength Aluminum Framing and Components

Catalog 1816-3/US



ENGINEERING YOUR SUCCESS.

Parker Hannifin Corporation

With annual sales exceeding \$10 billion, Parker Hannifin is the world's leading supplier of motion and control technologies and systems, providing precision-engineered solutions for a wide variety of commercial, mobile, industrial, and aerospace markets.

The company's products are vital to virtually everything that moves or requires hydraulic, pneumatic, electromechanical, or computer motion control.

Structural Systems Built Smarter By Parker

High-strength aluminum framing from Parker IPS is today's material of choice for assembling an unlimited variety of machine bases and frames, linear-slide systems, safety guarding, enclosures, worktables, material handling systems, and other industrial structures. What's more, innovative customers use our IPS technology as the foundation for systems that feature industry-leading Parker motion control solutions.



Parker offers complete engineered systems.

1st in Delivery, Field Sales and Distribution

Our Design Centers across North America support customers with local inventory, application engineering, fabrication, assembly, installation, and integration of pneumatic and electromechanical controls.

Our expert teams of experienced application engineers and knowledgeable professionals will work with you to analyze your structural framing problems, engineer solutions, and turn your ideas into realities.

Parker IPS Structural Aluminum Systems

The modular t-slot aluminum profile system has conquered the world of machine building, industrial automation, material handling and machine safety guarding and enclosures. This innovative construction system offers so much flexibility and cost savings in engineering, fabrication, and assembly; that it is now preferred for a multitude of industrial applications that benefit from these important features

IPS's complete line of structural aluminum and linear motion extrusions create innovative solutions in machine building, safety guarding, workstations and other unlimited industrial applications.



Parker world headquarters in Cleveland



www.parkermotion.com/IPS

Industry's most comprehensive website is your single source for:

- Product information
- Downloadable catalogs
- 3-D design files
- Training materials
- Support and downloads
- Rapid Quote Requests

24/7 Emergency Breakdown Referrals

The Parker product information center is available any time of the day or night at 1-800-C-Parker. Our operators will connect you with on-call representatives who will identify replacement parts or services for all motion technologies. Talk to a real person!

Modular Structural Solutions

High-Strength Aluminum Framing and Components



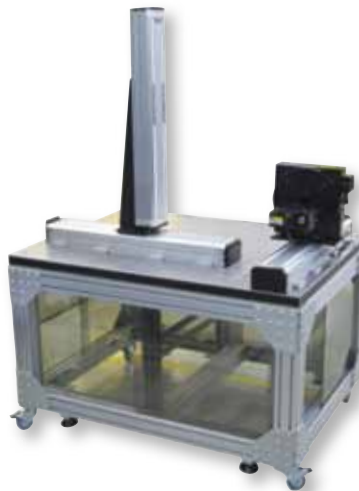
Parker Industrial Profile Systems (IPS) is a leading value-added manufacturer of high-strength aluminum framing, systems and components. Our focus is on our customer. By offering local inventory, application engineering, fabrication and assembly, and integration of industry leading Parker motion control products, we strive to exceed our customer's expectations in service, quality, delivery, and value.

Typical Applications

- Motion system integration
- Enclosures and guarding
- Machine bases and frames
- Workstations and tables
- Material handling systems
- Lean manufacturing tools
- Cleanroom designs

Benefits

- Extremely short turnaround time from design to completion
- No welding, grinding, cleaning, painting, or distortions
- Eliminates costly traditional manufacturing processes
- Flexibility to re-configure as requirements change



Your Choice to Suit Your Needs

Choose a level of service to suit your needs from a completely assembled structure to a bundle of uncut profiles.



Turnkey Assemblies –

Parker IPS offers complete assembled solutions that are designed, custom fabricated, and shipped in as little as seven business days.



Kits – Profiles are cut and machined to order, fasteners and accessories are included based on a parts list, and the entire order is packaged and shipped for final assembly at your location.



Bundles – Our entire product line can be ordered as bundles of uncut or cut-to-length profiles, with packages of fasteners and accessories.

Together we can think it, design it and build it...

From concept to completion....

Parker IPS is a leading value-added manufacturer of high-strength aluminum framing systems and components. Our focus is on our customer. By offering local inventory, application engineering, fabrication and assembly, and the integration of industry leading Parker motion control products, we strive to exceed our customer's expectations in service, quality, delivery and value

Markets Served

- Aerospace
- Automotive
- Educational
- Industrial Manufacturing
- Medical
- Packaging
- Pharmaceutical
- Plastics
- Semiconductor
- Textiles
- Tires

Typical Applications

- Motion Systems Integration
- Enclosures and guarding
- Machine bases and frames
- Workstations and tables
- Material handling systems
- Lean manufacturing tools
- Clean room applications
- Conveyor frames
- Test equipment
- Tool racks
- Test tables
- Tradeshow booths
- Store fixtures
- Sound enclosures

Turn your brainstorm into an application quote in as little as 24 hours - Parker's application engineers can do it!

Are other structural aluminum providers hampering your solution? Our experienced applications engineers can convert pen or pencil sketches into final drawings and quotes, often saving you money.

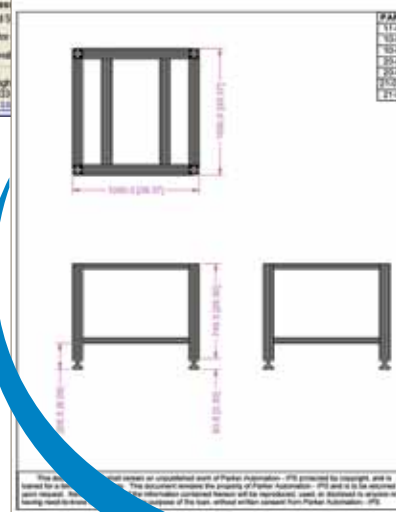
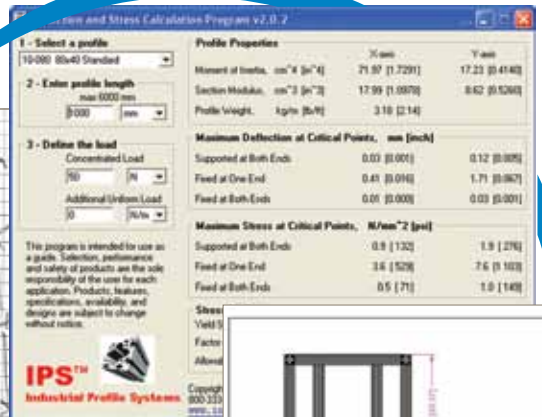
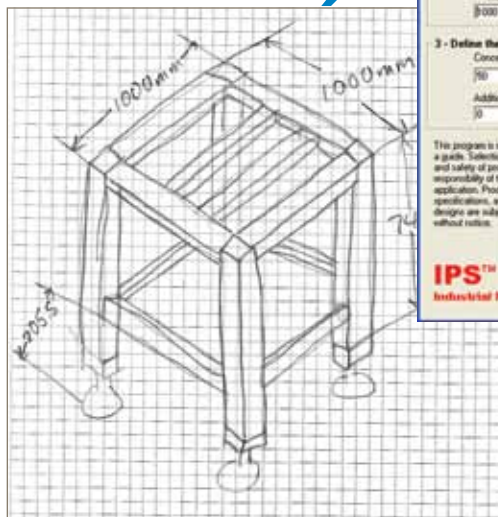
Parker can also supply engineered kits or sub-assemblies to make your next project flow smoothly. Most quotes can be turned around within 24 hours.

Call 330-335-6740/800-333-4932 to find your applications engineer.

Parker Structural System Designer (PSD)

Parker IPS utilizes the most versatile modeling package available for engineering high-strength structural systems. Our advanced 3D modeling will save you time and money, allowing engineers to test the form, fit and function of a complete structural system design.

Parker PSD will produce 3D model output for most 3D CAD packages. Graphic output is also available for design review.



Need a quote in a hurry?

Parker IPS has the engineering experience to make ground-up system development quick and easy. From our design software packages to our assembly or kitted solutions, we take system development to the next level. Let us assist you in designing your next system from concept to completion.

The IPS team of engineers is available to help design systems to ensure perfect field integration. IPS solutions are custom fabricated and shipped installation ready as kit or complete assemblies within a few business days.



Machine Services

- Cutting
- Tapping
- Drilling
- Counter boring

Custom services also available by our expert machinists to meet your exact requirements.

Value Added Services

- Metric & English catalog
- Parker Structural System Designer (PSD)
- Motion system integration
- Deflection program
- Engineering quotes and drawings
- Quick quote software
- Assembly manuals
- Assemblies, kits and bundles

Parker Hamilton Corp. Electromechanical, R.A.

QUOTE#

Parker IPS 138 Quadral Drive, Wallingford, OH 44281

Customer: [Redacted] Shipping Address: [Redacted]

Requestor: [Redacted] Phone: [Redacted] Billing Address: [Redacted]

Units Quoted: 1 Unit

Part Number	Qty	Length	UOM	Description	Mat. Code	Tap	Hole	Size	Unit Price	Line Price	Sub Price	Unit Price	Line Price	Sub Price	Total Qty	Notes
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Profiles

Parker Industrial Profile Systems has one of the most comprehensive product offerings in the industry.

- **More than 100+ individual high-strength aluminum profiles**
- **All structural profiles are aircraft grade, high strength, mill-certified with metallurgical properties of 6105-T5**
- **Aesthetically appealing extrusions offer best-in-class rigidity, durability, and hardness**
- **Unique T-slot design for reliable connection and easy modification**
- **Metric sizes range from 20 mm to 160 mm; inch sizes range from 1" to 6"**
- **Extensive range of smooth, grooveless profiles**

Linear Motion Components

- **Roller bearing components**
- **Delrin and UHMW slide bearings**
- **Easy-to-design, do-it-yourself, belt-driven solutions**

Fasteners and Accessories

The design of our structural framing fasteners and accessories takes a number of criteria into consideration, including functionality, aesthetics, strength, ease of assembly, and modular, flexible adaptation.



Parker offers a complete line of accessories to provide the right part for your application including:

- **T-slots, end caps, fasteners, and covers**
- **Gussets, plates and brackets**
- **Handles and hinges**
- **Panels, sliding doors and gate hardware**
- **Feet and casters**
- **Workstation accessories**
- **Slide blocks and bushings**

Panels & Wire Mesh

Panels and wire mesh are available in full sheets or to specified cut-to-size dimensions. 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.

Machining Services

Standard machining options include cutting, tapping, drilling, and counter boring. Additional custom machining by our expert machinists ensure that your design is complete and to your exact requirements.

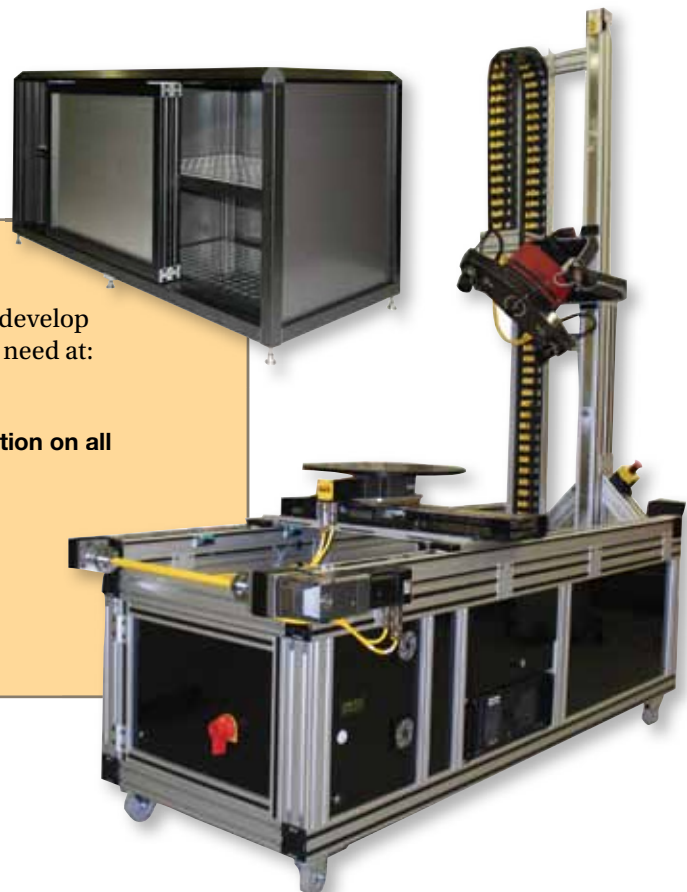
Tools and Support

Parker IPS offers the tools needed to design and develop your assembly solution. Download the tools you need at:

www.parkermotion.com/ips

- **Complete selection and specification information on all IPS products available on-line in pdf format**
- **3D CAD files for all available IPS products**

Avoid paying too much for an over-engineered solution, contact our applications team today at 800-333-4932 for quick response and help with designing the best solution.



Extrusion Profiles

- Basic Profiles
- Specialty Profiles
- Profile End Caps
- T-Slot and Profile Covers
- Conduit Profiles
- Conduit End Caps

Profiles
& End Caps

Fasteners

- Fasteners
- T-Nuts
- Miter Connectors
- Screws, Bolts, Nuts & Washers
- T-Clips & Cable Holders

Fasteners

Brackets, Gussets & Plates

- Brackets
- Gussets
- Corner Elements
- Joining Plates

Brackets,
Gussets & Plates

Panels & Doors

- Panels & Wire Mesh
- Panel Mounting/Mesh Retainers
- Door Guides & Rollers
- Rail Carts

Panels
& Doors

Handles & Hinges

- Handles
- Door Catches
- Latches & Locks
- Hinges
- Pivot Joint

Handles
& Hinges

Feet & Casters

- Feet
- Casters
- Base/Corner Mounting Plates

Feet &
Casters

Special Applications

- Pneumatic Components
- Workstation Accessories

Special

Linear Applications

- Slide Blocks
- Rail & Roller Systems
- Slide Bushing Systems
- Bearing Unit & Conveyor Profiles

Linear

Services, Tips & Tools

- Machining Services
- Assembly Tips
- Tools

Services,
Tips & Tools

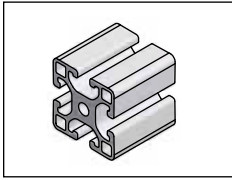
Index / Offer of Sale

- Part Number Index
- Catalog Index by Topic
- Offer of Sale

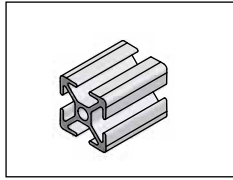
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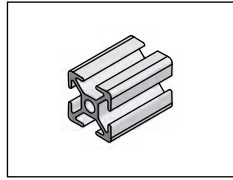
Section 1 – Profiles



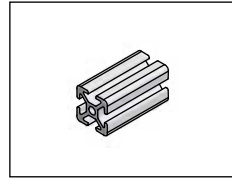
40 Series
 Pages 17-31



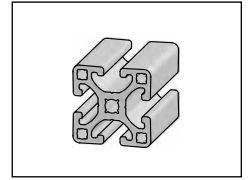
30 Series
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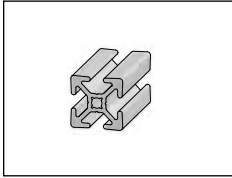
28 Series
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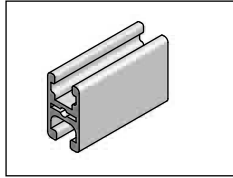
20 Series
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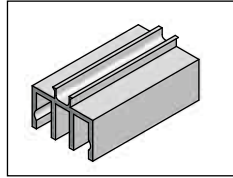
1.5" Series
 Page 44-50



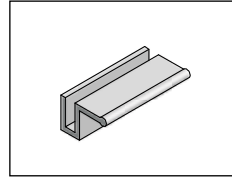
1" Series
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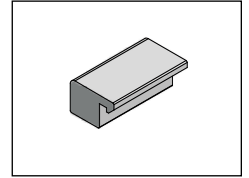
32x18 Frame Profile
 Page 54



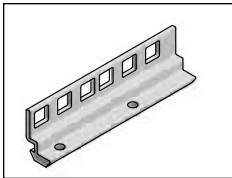
Door Guide Profiles
 Page 55-56



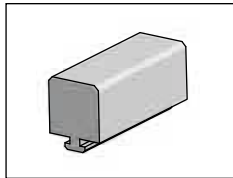
Panel Profiles
 Page 57



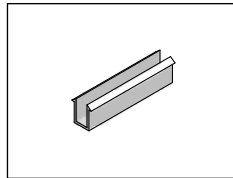
Clamp Profiles
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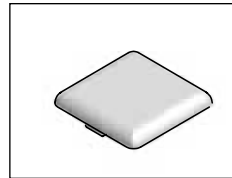
Rack Angle Profiles
 Page 59



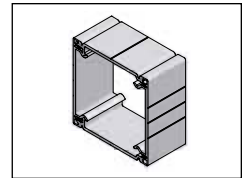
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Gaskets, Profile Covers
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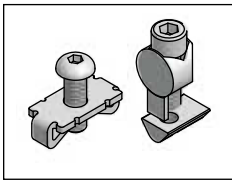


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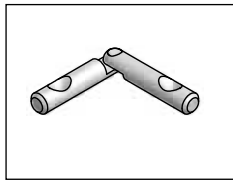


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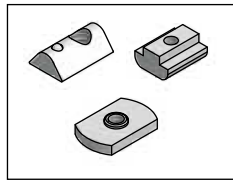
Section 2 – Fasteners



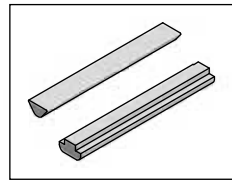
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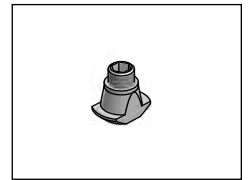
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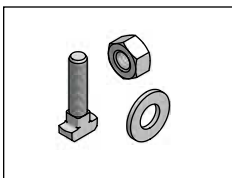
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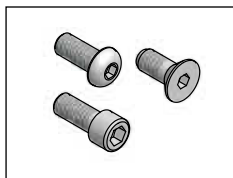
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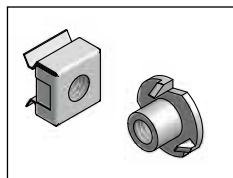
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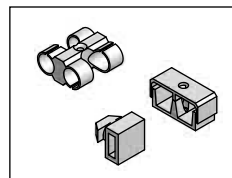
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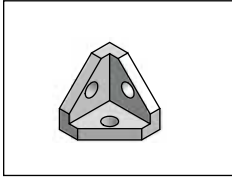


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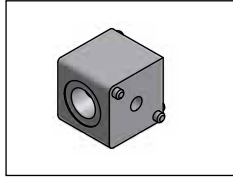


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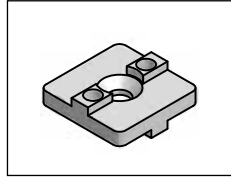
Section 3 – Brackets, Gussets & Plates



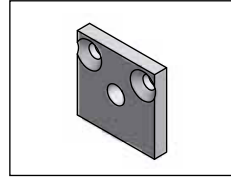
Corner Brackets
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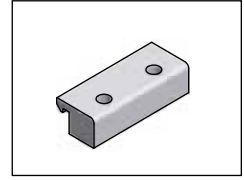
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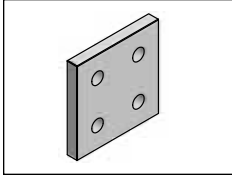
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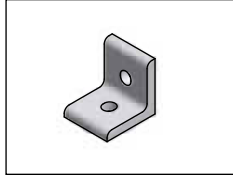
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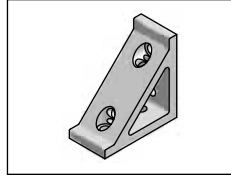
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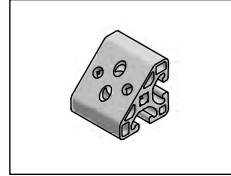
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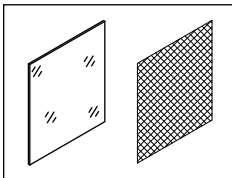


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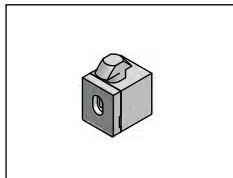


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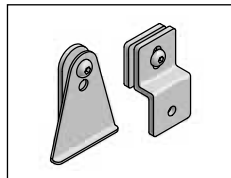
Section 4 – Panels & Doors



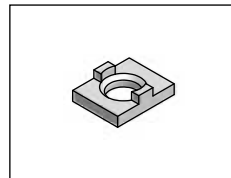
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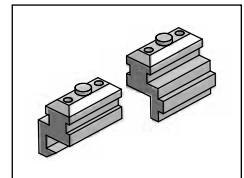
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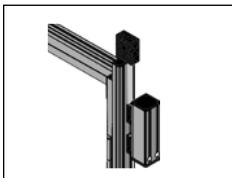
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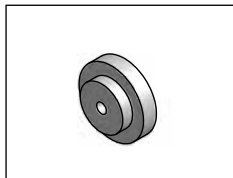
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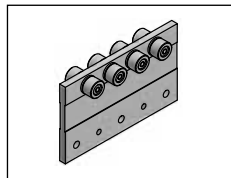
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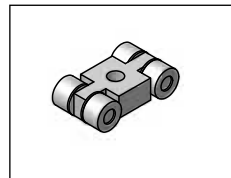
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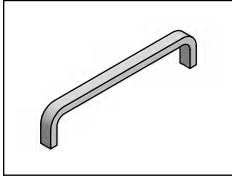


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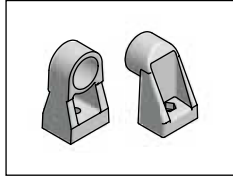


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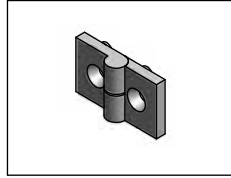
Section 5 – Handles, Hinges & Safety Switches



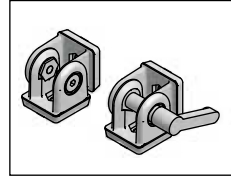
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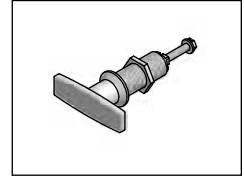
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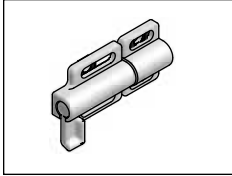
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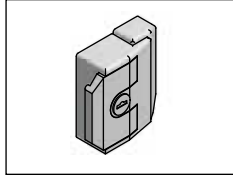
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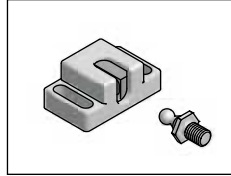
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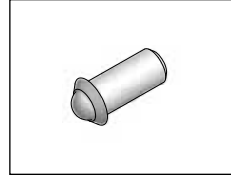
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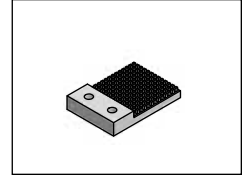
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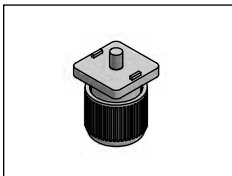


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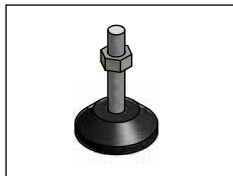


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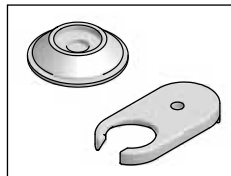
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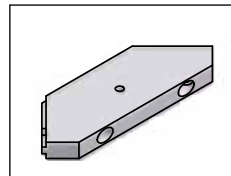
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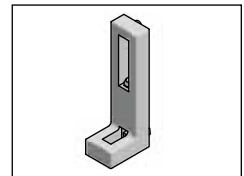
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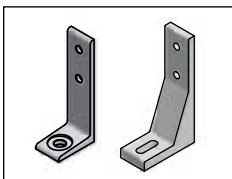
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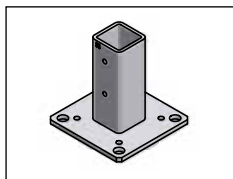
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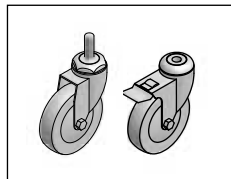
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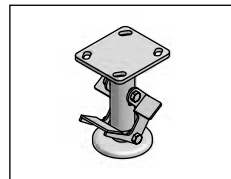
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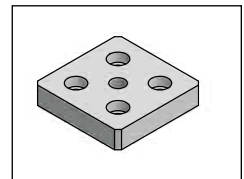
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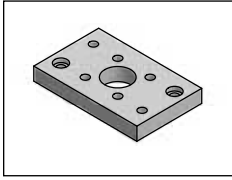


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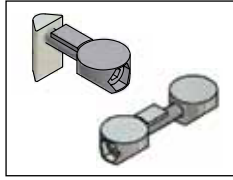


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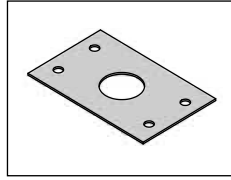
Section 7 – Special Applications



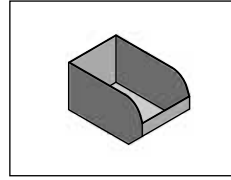
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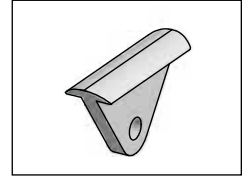
Pneumatic Fasteners
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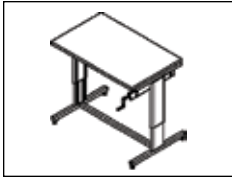
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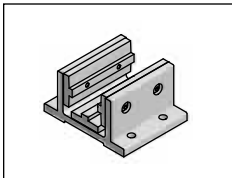


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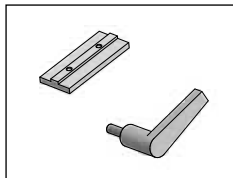


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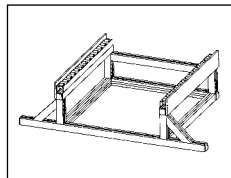
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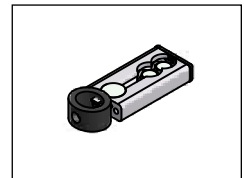
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Linear Roller Systems
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System Components
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Section 9 – Services, Assembly Tips & Tools

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)

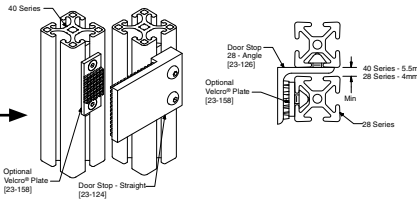
Profile Compatibility

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.

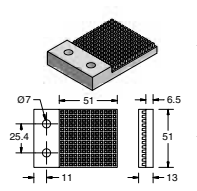
Catalog 1816-3/US
Industrial Profile Systems

Door Stops
Handles & Hinges



How to Assemble →

Door Stops



← **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

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.

Technical Data

Aluminum, Clear Anodized with Velcro® Pad

Recommended Fastening Hardware →

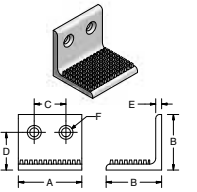
Recommended Fastening Hardware (Order Separately)

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.

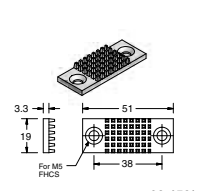


← **3D View**

← **Dimensions**

← **Part #**

23-124




← **3D View**

← **Dimensions**

← **Part #**

23-125




← **3D View**

← **Dimensions**

← **Part #**

23-158*

Handles & Hinges


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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?

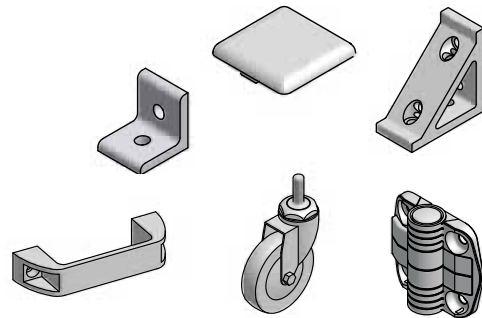
- Aesthetics/hidden (standard fastener, universal)
- Strength (universal fastener, standard)
- Ease-of-assembly/no machining (joining plate, gussets)
- Adjustability (gussets, angle bracket, universal)

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.

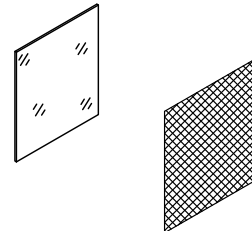
- Aesthetics
- Ease-of-assembly
- Load on structure
- Functionality

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.

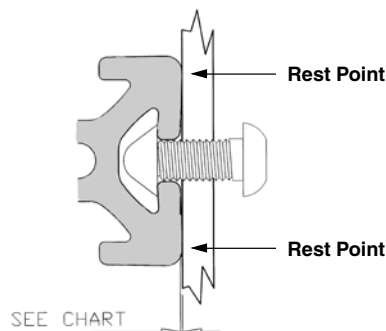
Profile Finish

- 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

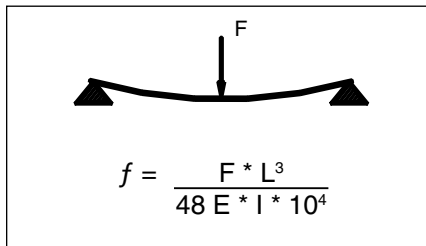


Application

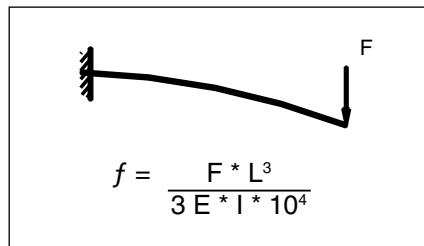
Stand-alone program able to calculate deflection and stress of IPS aluminum profiles based on profile selection, length and load (evenly distributed and/or concentrated at the critical point). Three cases for the profile attachment are calculated: supported at both ends, fixed at one end, fixed at both 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

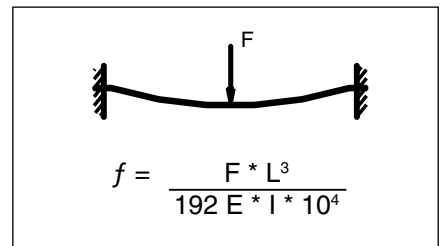
Supported at both ends



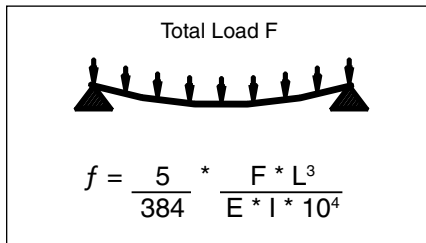
Fixed at one end



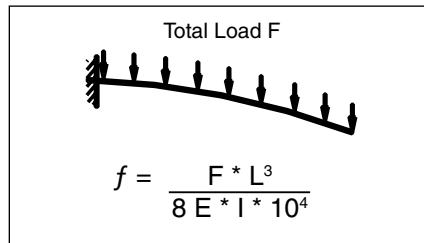
Fixed at both ends



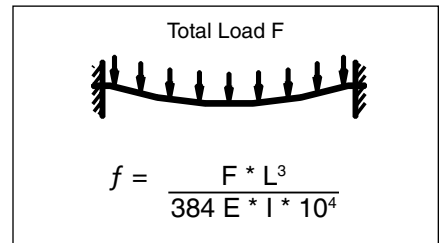
Total Load F



Total Load F



Total Load F



In the formulas:

f = deflection in mm

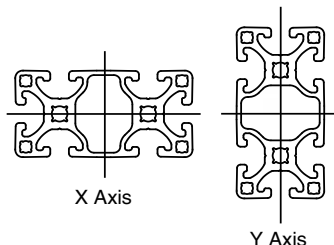
F = load in N

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)

$$F_U = m * L * g = (3.18 * 10^{-3}) * 1000 * 9.81 = 31.2 \text{ N}$$

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

Supported at both ends:

$$f = 0.021 + 0.008 \approx 0.03\text{mm}$$

Fixed at one end:

$$f = 0.331 + 0.077 \approx 0.041\text{mm}$$

Fixed at both ends:

$$f = 0.005 + 0.002 \approx 0.01 \text{ mm}$$

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

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