

TSLOTS DesignPro™ Add-in for SolidWorks®

Save Time and Money with TSLOTS DesignPro™

The TSLOTS DesignPro™ is a design tool ADD - IN for SolidWorks® 2003-2011.

- Reduces Modular Framing Design Time by Over 50%
- Creates Automatic Bill of Material
- Provides Real-Time Pricing

TSLOTS Deflection Calculator/Beam Selector

Performs the following functions:

- Selects Beam by Allowable Stress
- Selects Beam by Allowable Deflection
- Calculates One Unknown Based on a Selected Beam

Additional 2D and 3D CAD Drawings

We also offer part models and drawings for other CAD programs:

- 2D .dwg, .dxf
- 3D .step, .iges, .sat

TSLOTS Catalog and Price List

The TSLOTS Catalog and Price List are viewable in .pdf format.

*See Website for Operating System Compatibility.

CALL OR GO ONLINE NOW FOR MORE INFORMATION

Phone: 800.824.2049 | www.tslots.com



Appendix

INTRODUCTION

Thank you for ordering the NEW TSLOTS catalog. The TSLOTS catalog has been enhanced to include new profiles, accessories, TSLOTS brackets and many other parts designed to complete your project. TSLOTS is a product offering of Futura Industries, an aluminum extrusion company that provides stock and custom extrusions. If your project calls for a custom extrusion, we can provide it for you too!

The concept behind the T-Slotted aluminum extrusion is to make assembly of structures faster and easier than using welded steel. That's because the main component of the system is the TSLOTS design: insert a T-Nut and fastener into a T-Slot and tighten. It's that simple. No welding or grinding required. All you need to tighten your TSLOTS design is a few simple hand tools.

When you are done, you have a durable, strong, lightweight structure that's functional and attractive. The high-strength extruded aluminum profiles have a clear anodize surface that is scratch and corrosion resistant. Your structure never needs painting and is maintenance free.

PRODUCT WARRANTY

All Futura Industries (TSLOTS) products are guaranteed to be free of actual defect in material and workmanship for (1) full year from the date product was shipped from the factory. This warranty is limited to replacing or repairing, at Futura's option, F.O.B. Futura Industries, any part which, upon Futura inspection, is found to have a defect in material and/or workmanship. Futura in no event shall be liable for indirect or consequential damages arising out of the use of Futura products. Components purchased by Futura for inclusion by Futura shall be warranted only to the extent set out above and/or to the guarantee or warranty, if any, made by the supplier of said component.

No warranty is made by Futura, express or implied, that Futura products as used in a customer's design and specifications are fit for that customer's specific purpose. Apart from the above express warranty, there are no warranties, express, implied or statutory, including, without limitation, warranties of merchantability and fitness for a particular purpose, which extend beyond the description on the face hereof.

All product is shipped via best carrier, unless customer specified, F.O.B. Clearfield, Utah.

» *Returned unused product will be subject to a 20% restocking fee.*

HOW TO CONTACT US

Bldg H-11 Freeport Center
P.O. Box 160350
Clearfield, Utah 84016-0350

801.773.6282 Direct
800.824.2049 Toll Free
877.777.5753 Toll Free Fax

saleseng@tslots.com Email

MINIMUM ORDERS

We don't believe in minimums. If you need it, we'll ship to you. We appreciate all of your business, even the small stuff.

HOW TO ORDER

The fastest way for your order to be processed is to follow the format below.

ALWAYS INCLUDE:

- Ship to address (no P.O. Boxes)
- Shipping method
- Purchase order number

WHEN ORDERING, IT IS BEST TO LIST YOUR ORDER IN PRODUCT GROUPS

1. Extrusions (TSLOTS and Structural)
2. Custom Machining (As quoted by Futura Industries)
3. Panels (Plastic, Wire, Alupalite, etc.)
4. Machining Services (Cutting, Tapping, Access Holes, etc. for all aluminum and panels)
5. Hardware (Fasteners, Joining Plates, TSLOTS Brackets, Hinges, Hardware, Accessories, Linear Motion, Stanchions)
6. Special Instructions

	ITEM # (Descripton)	QTY	LENGTH	MACHING SERVICE NUMBER
Extrusions	650000 TS 1010	4	22"	660035 Side A and B
	650005 TS 1515	8	45.25"	660028 Side A and B
	650008 TS 1530	2	240"	
	650010 TS 1545	4	15"	660020 in Side A1, A2, A3 B1, B2, B3
Custom Machining	Cust #	4		Custom 45° Angle per drawing
Panels	655432	2	4 sq. ft.	1/4" Clear Polycarb 24" x 24" w/ 4 660097 see drawing
Machining	660002	4		CTL TS 1010
	660003	8		CTL TS 1515
	660007	4		CTL TS 1545
	660035	8		1/4 -20 Tap for TS 1010
	660028	16		15 S. Access Hole .295 thru
	660020	24		15 S Anchor Fastener C'bore
	660062	2		Cut Plastic Panel < 48"
	660097	4		Notch Panel for End Fastener Clear per drawing
Hardware	651161	80		15 S End Fastener w/ screw 5/16-18
	655000	8		TS 1010 End Cap
	655105	10		15 S Black T-Slot Cover
	651138	30		15 S Double End Fastener w/Screw 5/16-18
	Special Instructions:			

SUBMIT YOUR ORDER 3 WAYS

TOLL FREE
800.824.2049

TOLL FREE FAX
877.777.5753

EMAIL
orders@tslots.com

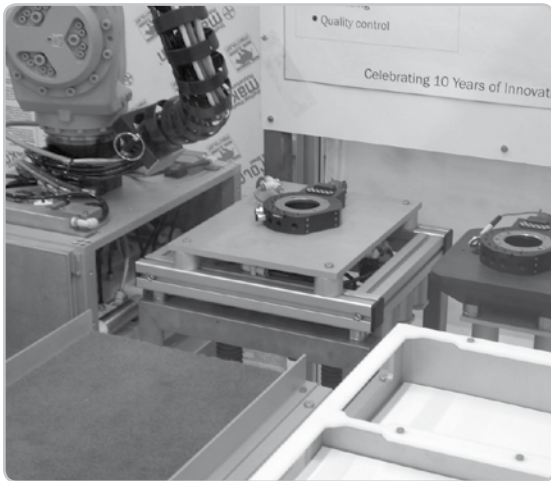
TSLOTS Ideas



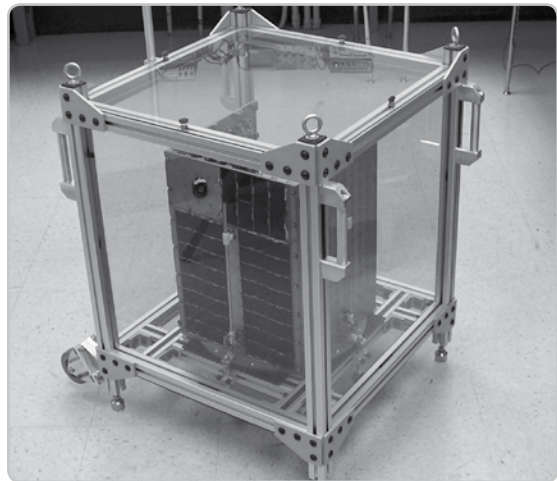
clean rooms



work carts



fixturing



safety enclosure



inventory management



work table

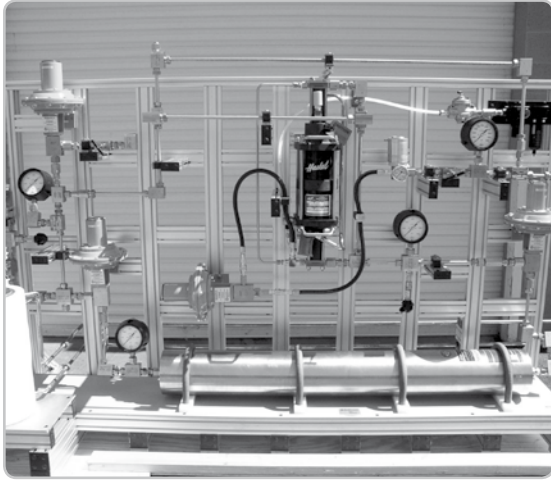


packaging



machine enclosures

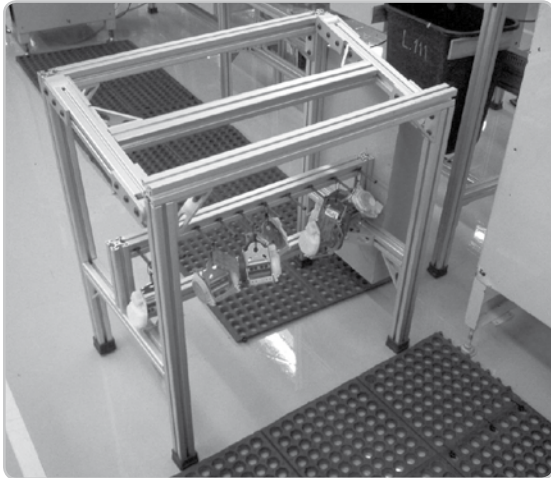
TSLOTS Ideas



test hydraulics frames



test fixture



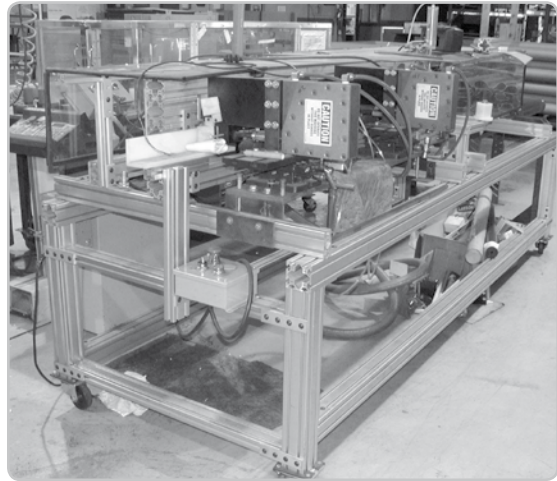
test rack



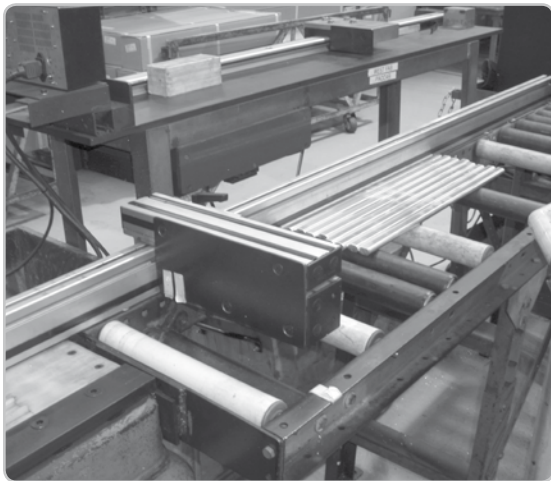
robotic enclosure



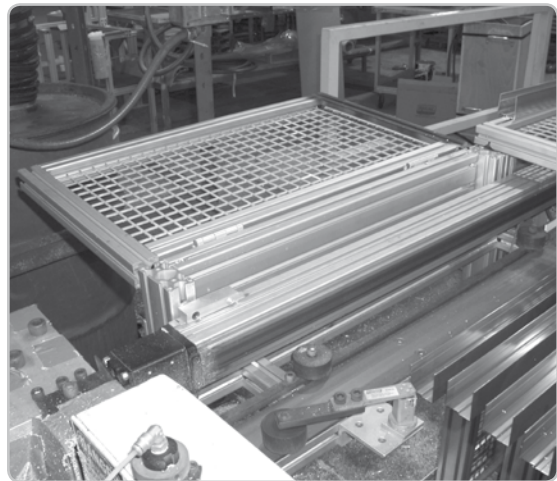
office shelving



automation



saw guide



safety guarding

TSLOTS Ideas



ergonomic workstation



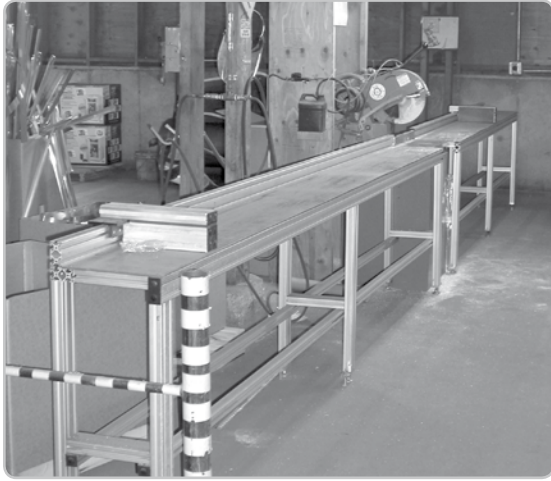
lean manufacturing



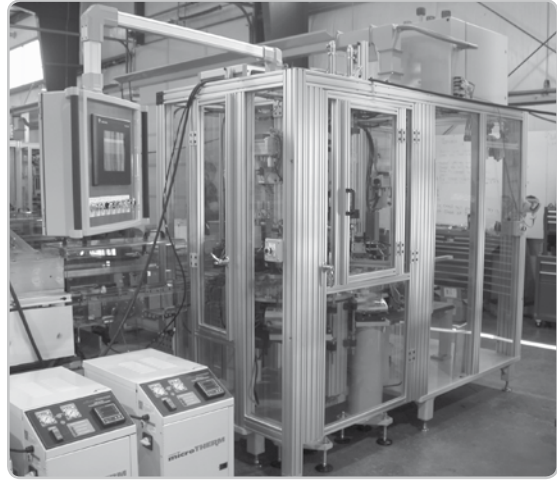
office furniture



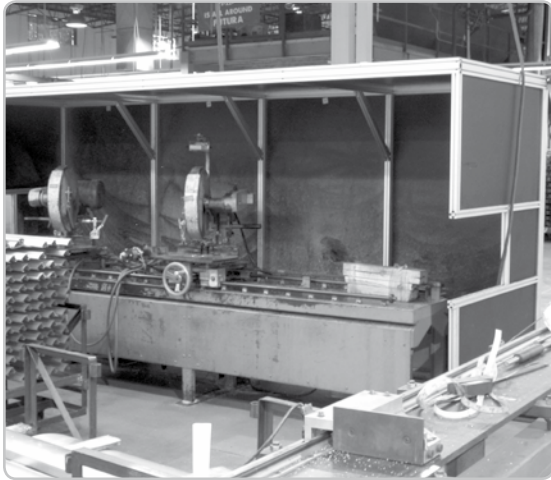
point of purchase display



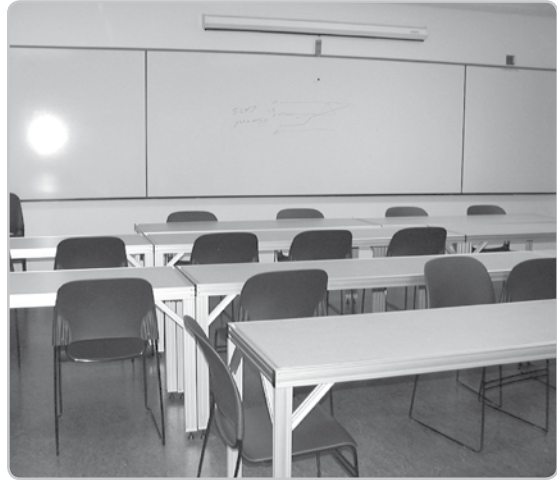
saw runout table



test enclosure



enclosure



training rooms

Technical Data

TSLOTS EXTRUSION ADVANTAGES

- Linear adjustment in X, Y and Z axis
- All Fractional TSLOTS are on 1/2", 3/4", 1" or 1 1/2" center lines. All Metric TSLOTS are on 25mm and 40mm center lines.
- Use fractional or metric sized fasteners
- Lightweight and easy to use
- Stocked in 240" lengths
- No welding required to assemble your design – no heat stress or warpage
- Easy to fabricate
- Add to your design or change it at any time – flexibility is the key

EXTRUSION SPECIFICATIONS

Alloy – 6360*, T6 Temper

Yield Strength (0.2% proof test) – 207 mpa = 30 ksi

Tensile Strength (.02% proof test) – 228 mpa = 33 ksi

Elasticity (E) – approximately 10,000,000 lbs./sq.in.

Hardness – Webster Model "B" 12-13

Flatness – .004" per inch of width

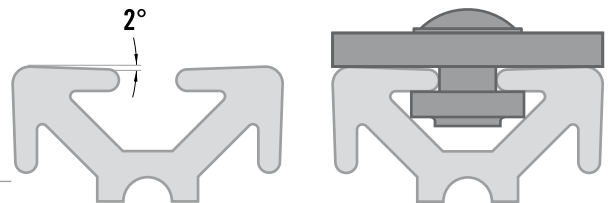
Straightness - .0125" per foot of length, not to exceed .120 inches over 20 feet of length

Twist – Twist per foot of length does not exceed .25° and total twist over 20 feet of length does not exceed 1.5°

**As an extruder, there are many other alloys that we can extrude. If your application calls for a different alloy, let us know and we can extrude it for you.*

SPRING LOCK FEATURE

All TSLOTS structural extrusions have a 2° taper that spring locks fasteners as they are tightened. Fasteners will not loosen, even under heavy vibration.



FASTENER TORQUE SPECIFICATIONS

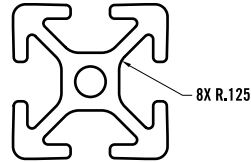
The table (below) indicates the amount of torque needed in foot lbs. to activate the 2° drop lock feature of the extrusion. The nut and bolt combination is pre-loaded when tightened to the minimum torque rating. The pre-loaded state makes a vibration proof connection.

FASTENER DESCRIPTION	TESTED EXTRUSION	MIN FT LBS TORQUE	MAX FT LBS TORQUE
5/16-18 FBHSCS or BHSCS	1.5" x 1.5"	15	20
Economy T-Slot Stud, Washer & Hex Nut	1.5" x 1.5"	20	25
Anchor Fastener & Standard T-Nut	1.5" x 1.5"	17	22
End Fastener	1.5" x 1.5"	17	22
1/4-20 FBHSCS or BHSCS	1.5" x 1.5"	12	17
1/4-20 FBHSCS used as an End Fastener for the 1" x 1"	1" x 1"	13	18
10-32 SHCS or BHSCS	1.5" x 1.5"	9	13

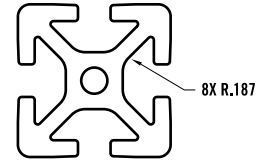
TSLOTS RADIUS

TSLOTS extrusions incorporate a radius in the T-Slot to ensure drop-in T-Nuts are easy to use.

10 SERIES



15 SERIES



ALUMINUM ALLOY

An aluminum extrusion alloy is a predetermined mixture of one or more elements together with aluminum to be heated and hydraulically pressed through an extrusion die. Some common elements alloyed with aluminum include copper, magnesium, manganese, chromium, silicon, iron, nickel and zinc.

TSLOTS extrusions use the 6360 alloy. In addition to aluminum, the major alloying elements for this alloy include: Mg .25-.45% and Si .35-.8%.

ANODIZING

Anodizing is an electrochemical process that thickens and toughens the naturally occurring protective oxide. The resulting finish makes a corrosion resistant extrusion. TSLOTS extrusions have an etch anodize finish that is .15-.25 mil. thick.

REMEMBER – WE CUSTOM EXTRUDE TOO!

Futura can ship you a finished extrusion with your TSLOTS orders. Futura provides the following operations:

- Extrusion
- Machining
- Heat treating
- Warehousing
- Cut to length
- Anodizing
- Painting
- Fabrication
- Engineering assistance
- Punch, slot, countersink

TSLOTS VS. WELDED STEEL

TSLOTS ADVANTAGES

- No welding
- No painting (unless you want to)
- No rusting
- No cleanup
- No special tools
- No electricity
- Easy modifications
- Add on attachments
- Remove attachments
- Strong support ability
- Linear slide capability
- Comes packed ready to assemble or arrives assembled if desired
- Compatibility with competitors attachments
- Lower cost per project

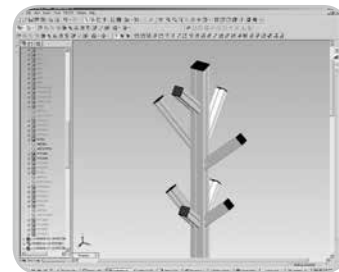
WELDED STEEL DISADVANTAGES:

- Special equipment, welder
- Welding supplies
- Paint
- Cleaning supplies
- Fabricating equipment
- May rust

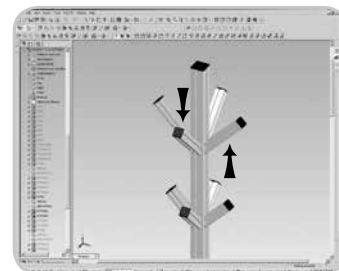
WELDED STEEL ADVANTAGES

- Permanent assembly

MAKING CHANGES TO YOUR DESIGN IS EASY!



BEFORE



AFTER

Technical Data

DEFLECTION CALCULATIONS

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

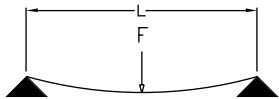
EQUATION VARIABLE UNITS RESPECTIVELY

- Max. Deflection is in inches
- "F" or Force is in pounds
- "L" or Length is in inches
- "E" or Modulus of elasticity is in pounds per inch squared
- "I" or Moment of Inertia is in inches⁴
- "W" or Weight is in pounds per inch

* For reference only.

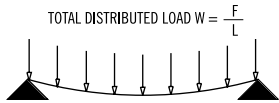
SUPPORTED LOADS

CONCENTRATED LOAD AT CENTER (*simply supported*)



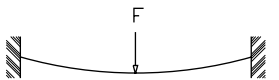
$$\text{MAX DEFLECTION} = \frac{FL^3}{48 EI}$$

UNIFORMLY DISTRIBUTED LOAD (*simply supported*)



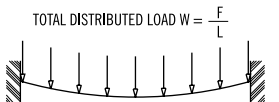
$$\text{MAX DEFLECTION} = \left(\frac{5}{384}\right) \left(\frac{WL^4}{EI}\right)$$

CONCENTRATED LOAD AT CENTER (*between fixed supports*)



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

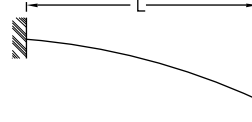
UNIFORMLY DISTRIBUTED LOAD (*between fixed supports*)



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

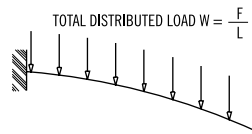
CANTILEVER LOADS

CONCENTRATED LOAD AT CENTER (*simply supported*)



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

UNIFORMLY DISTRIBUTED LOAD (*simply supported*)



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

EXTRUSION	(E) MODULUS OF ELASTICITY	(Ix) MOMENT OF INERTIA	(Iy) MOMENT OF INERTIA
TS10-10	10,000,000 lbs/sq. in	.046 in ⁴	.046 in ⁴
TS10-10QR	10,000,000 lbs/sq. in	.0435 in ⁴	.0435 in ⁴
TS10-20	10,000,000 lbs/sq. in	.087 in ⁴	.321 in ⁴
TS20-20	10,000,000 lbs/sq. in	.578 in ⁴	.578 in ⁴
TS15-15	10,000,000 lbs/sq. in	.266 in ⁴	.266 in ⁴
TS15-15L	10,000,000 lbs/sq. in	.194 in ⁴	.194 in ⁴
TS15-15QR	10,000,000 lbs/sq. in	.172 in ⁴	.172 in ⁴
TS15-30	10,000,000 lbs/sq. in	.502 in ⁴	1.877 in ⁴
TS15-30L	10,000,000 lbs/sq. in	.408 in ⁴	1.431 in ⁴
TS15-45	10,000,000 lbs/sq. in	.739 in ⁴	5.913 in ⁴
TS30-30	10,000,000 lbs/sq. in	3.379 in ⁴	3.379 in ⁴
TS30-60	10,000,000 lbs/sq. in	6.430 in ⁴	21.856 in ⁴

» Deflection calculations are for reference only - they are only approximate.

TSLOTS DESIGNPRO™

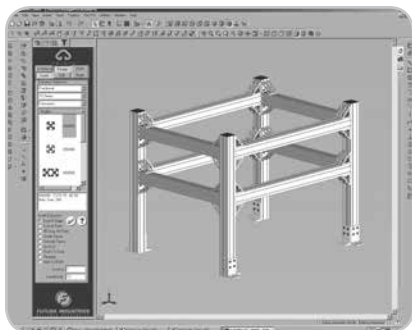
TSLOTS DesignPro™ is an add-in product for SolidWorks® software that makes designing with structural aluminum extrusions faster and easier than ever before. TSLOTS DesignPro™ reduces the time it takes to create drawings by more than 50% over manual methods. The software also creates an automatic bill of materials (BOM), provides real-time pricing, and allows engineers to send a request for quote (RFQ), place orders, or check the status of orders online.

TSLOTS DesignPro™ is available to users of SolidWorks 2004, 2005 and 2006. For those engineers using CAD systems other than SolidWorks, Futura Industries offers design assistance and can provide drawings using SolidWorks eDrawings™ software.

TSLOTS makes the creation of assembly structures faster and easier than using welded steel. The only tools that an engineer needs to complete a structure are a t-nut, fastener, and an allen wrench. Applications include machine guarding, machine frames, workbenches, assembly stations, tool racks, test tables, and clean room structures.

TSLOTS DesignPro™ software is available for free download at www.tslots.com in the Downloads section.

USE TSLOTS DESIGNPRO™



Our program creates a bill of materials and generates pricing while you create a 3-D SolidWorks® drawing. This program can be used with full versions of SolidWorks® 2003-2011.

TSLOTS also offers 2D-DXF, 2D-DWG, 3D-DWG, 3D-STEP, 3D-IGES, and 3D-SAT files that are compatible with AutoCAD® and many other popular CAD programs.

All of these useful design tools and much more are available as free downloads from www.tslots.com and are also available on CD-ROM.

Give us a call at 800-824-2049 or visit our website at www.tslots.com

FREE DESIGN ASSISTANCE

Our engineers are available to assist you Monday through Friday from 8:00 a.m. until 5:00 p.m. MST. Our highly qualified staff offers design assistance, answers to technical questions, and provides DesignPro support for your projects. Simply contact your distributor and email or fax your project drawings to us.

DESIGNPRO™ TRAINING ONLINE AT WWW.TSLOTS.COM

Maximize your usage of the TSLOTS DesignPro™ by learning how to use the different features included in the SolidWorks® add-in. Training modules located on our website are designed to quickly teach you how to use the DesignPro's different features. The DesignPro was developed to utilize all of the SolidWorks features that users are familiar with so learning the add-in should be intuitive and the learning curve should be short. Should you have questions or want to learn more about the TSLOTS DesignPro™ please contact our Engineering Department.