Section 1: Introduction

Why Aluminum Structural Framing?

Do you know why you’re seeing more and more metal structures made of Bosch Rexroth aluminum structural framing rather than welded steel? Simple. Bosch Rexroth framing costs less, is more versatile, and does a better job than steel. And perhaps most important, it’s easier to work with.

That’s because at the heart of the system is the framing’s T-slot design: insert a T-bolt into a T-slot and tighten. It’s that simple. No welding, no grinding, no nothing. Your frame goes together quickly and easily using a few simple hand tools. Then, choosing from a wide assortment of accessories, you add whatever components you want just as easily.

And when you’re done, you have a strong, lightweight structure that’s as functional as it is attractive. The high-strength extruded aluminum profiles have a natural-color, anodized surface that’s scratch- and corrosion-resistant, never needs painting, and is maintenance-free.

More things can be built, more ways to build them

With Bosch Rexroth aluminum structural framing, you can build just about anything you can imagine. This includes perimeter guarding, work tables, machine bases, industrial guarding, tool racks, robot stands, workstations, carts, display units, and much more. You name it, you can build it. What’s more, Bosch Rexroth offers the broadest line of aluminum profiles, connectors, and accessories. This means you can build structures exactly the way you want, to support the loads you want. You never overbuild or underbuild.

And all Bosch Rexroth products are engineered to work together. That means they fit together precisely, align accurately, and assemble quickly. Bosch Rexroth T-slots allow the use of larger and stronger hardware. So once you put a structure together, it stays together.
Section 1: Introduction

Made in U.S.A.

Although Bosch Rexroth invented aluminum structural framing in Europe over 30 years ago, today most of the material used in the system is made in America and, of course, is stocked here, too. In fact, all North American Bosch Rexroth distributors maintain a complete inventory of almost all the items shown in this catalog, and can ship items with the GoTo logo fast, often with next day delivery. For fastest service, go to www.boschrexroth-us.com/framing for pricing, CAD and to place your order with your local distributor.

Finally, many businesses are becoming or are already global operations. You’ll note that English measurements appear in parentheses throughout this catalog, and that conversion charts and equations are listed in the back of the catalog. In today’s world, dealing internationally is just a way of life. So we’ve made it easy for you to convert back and forth, quickly and accurately.

Need assistance? Ready to order?

We realize every question you have probably won’t be answered by this catalog. So call 1-800-REXROTH (1-800-739-7684), and someone from our fully trained staff will be happy to help you. If you’d like, they can send you our MTpro Planning software to help you design a project. See inside back cover for more details. Or they can provide you with the name and phone number of the authorized Bosch Rexroth distributor nearest you to help you get started.

Use our eCommerce website at www.boschrexroth-us.com/framing to make ordering, pricing, and distributor identification as easy as clicking your mouse.
Section 1: Introduction

EcoSafe Guarding Enclosure

Manual Workcell

Workstation with Manual Conveyor
Section 1: Introduction

Automated Assembly Line

Enclosed Welding Station

Lean Workcell

Clean Room Enclosure
Section 1: Introduction

Selecting Profiles and Components

Select the profile

The wide variety of Bosch Rexroth profiles ensures that we offer a profile to cover virtually any application. Selecting which profiles are right for your applications may be a question of function, appearance, strength, or a combination of all of the above.

For an overview of available profiles, as well as their technical specifications, see pages 2-0 to 2-7.

Standard profiles, as well as some specialty profiles, are included in Section 2: Profiles. Additional application specific profiles are shown in the section covering that application. For example, for sliding door support profiles, see Section 5: Doors and Door Components.

The Profiles section of this catalog is separated by “series”, such as 20-series, 45-series, etc. The first page of each series features three dimensional drawings such as those below, showing all the profiles within that series and the page on which they are detailed.

On the specific profile page, you will find an end-view of the profile with dimensional information like the one below. Dimensions are given in millimeters, with the English equivalents for key dimensions shown in parentheses. Accessories and other components will also have dimensional drawings, with other relevant information such as fastener sizes indicated.

Below the dimensional drawing, you will find “Machined Options”. These range from simply cut to a custom length to special drilling or machining for use with certain connectors or other applications. The available machining options are indicated by a brief description, an icon, and the minimum and maximum available length for that machining option.

For example:

Profile 45x45, M12/–, specify length ≥55mm≤6000mm

means a 45x45 profile, with the center bore tapped M12 on one end and the other end square cut with no additional machining. It can be ordered from a minimum available length of 55mm up to 6000mm maximum length.

A fold-out chart on the inside back cover provides more detailed information about machining options. If you don’t see a machined end finish that will meet your application requirements, ask your distributor about other machining options.

In addition, you will find other useful information on many of the profile pages, such as clean room suitability, ESD compatibility, common applications, etc. Throughout the catalog, you will find helpful hints for assembly and applications.
Section 1: Introduction

Connect it all together

Bosch Rexroth offers a variety of different connectors and fasteners for different applications, materials, and strength requirements. Some examples of connections include:

1) 90° right angle connections for two, three, or even more profiles,
2) 45° angle connections,
3) 180° straight-line connections, or
4) Fixed or movable multi-angle connections.

The first step is to determine what kind of connection you need to do the job you want. Your next step is to determine what features you want in the type of connection that you've selected.

For example, some connectors and fasteners give you more flexibility and allow you to quickly change or rearrange your structure; some are stronger, some cost less, some provide concealed connections for a better appearance, some provide complete access to the T-slot, and some require machining of the profile end (tapped, milled, drilled, or square cut). To determine which will give you the best combination of price, performance, and function—based on your application—talk to your authorized Bosch Rexroth distributor.

Add the finishing touches

Whether you are outfitting an ergonomic workstation, building a non-powered material transfer system, or outfitting an entire factory with flow racks and other lean structures, Bosch Rexroth provides a single source for your needs. With everything from decorative end caps and cover strips to pneumatic air bars, we offer everything to build anything.
Section 1: Introduction

What You Should Know To Help You Get Around This Catalog

Profiles

1. All dimensions in this catalog are metric, and are often followed by U.S. equivalents in parentheses, particularly in key areas such as the technical specifications. For example: 45mm (1.77”). A Metric/English conversion table and Quick Conversion chart are shown on page 1-9, as well as at the back of the catalog.

2. Profiles ordered in bundles are available only in maximum lengths. Single profiles can be ordered in any length (in 1mm increments within the specified range). Please note that the minimum length varies according to machining option. When ordering single profiles cut to length, be sure to specify the length in millimeters after the part number. Example: 3 842 992 457/__mm.

3. The maximum length listed for each profile is the usable length. This means the profile may actually be longer to accommodate anodizing clamp marks.

Non-Profile Components and Lot Sizes

Most non-profile products, such as connectors, end caps, tools, etc. include a column after the description labeled “Lot Size”. Unless specifically indicated, all part numbers of non-profile components are single-piece part numbers. However, many items are only available in larger packages, or lots. For example, casters may be sold in lots of 4, and some connectors may be in lots of 10. When ordering these parts, use the listed part number, but the ordered quantity MUST be divisible by the lot size; for example, if lot size equals 10, then ordered quantity is 10, 20, 30, etc.

Common profile terms

What prefixes and suffixes mean:

S8 Self-Tapping Screw: S=self-tapping
30x30 1S: 1S=T-slot on one side only
30x30 2S: 2S=T-slots on two sides
30x30 3S: 3S=T-slots on three sides
30x30 2SA: 2SA=T-slots on two adjacent sides
45x45H: H=heavy duty
20x20R: R=radius corner profile
45x45HR: HR=half-round profile
30x30°R: 30°R=dual radius profile with 30° outside radius.

Other specialty profiles carry suffixes that are explained in the description on that profile’s catalog page.

What is included?

In drawings showing multiple items (such as a connector and profiles, as seen here), components that are shaded gray are included with your order. Likewise, included components are typically referenced in the description and dimensional drawing. For example, when you order the 45° angle 30mm connector kit (part number 3 842 518 426), the kit includes connector, cover, adapters, T-nuts, and all fastening hardware.
Section 1: Introduction

**Quick Conversion Chart**

<table>
<thead>
<tr>
<th>Millimeters</th>
<th>Inches</th>
<th>Feet</th>
</tr>
</thead>
<tbody>
<tr>
<td>20</td>
<td>0.79</td>
<td>0.07</td>
</tr>
<tr>
<td>30</td>
<td>1.18</td>
<td>0.10</td>
</tr>
<tr>
<td>45</td>
<td>1.77</td>
<td>0.15</td>
</tr>
<tr>
<td>60</td>
<td>2.36</td>
<td>0.20</td>
</tr>
<tr>
<td>90</td>
<td>3.54</td>
<td>0.30</td>
</tr>
<tr>
<td>180</td>
<td>7.09</td>
<td>0.59</td>
</tr>
<tr>
<td>1000</td>
<td>39.37</td>
<td>3.28</td>
</tr>
<tr>
<td>2000</td>
<td>78.74</td>
<td>6.56</td>
</tr>
<tr>
<td>5600</td>
<td>220.47</td>
<td>18.37</td>
</tr>
<tr>
<td>6000</td>
<td>236.22</td>
<td>19.68</td>
</tr>
</tbody>
</table>

Below are symbols you’ll see throughout this catalog. You can use the symbols to quickly identify compatibility between profile, connector, fastener and accessories.

<table>
<thead>
<tr>
<th>Symbol</th>
<th>What it means</th>
</tr>
</thead>
<tbody>
<tr>
<td>6</td>
<td>Profile has 6mm T-slot. Connector, fastener, or accessory is designed to be used with profile with 6mm T-slot.</td>
</tr>
<tr>
<td>8</td>
<td>Profile has 8mm T-slot. Connector, fastener, or accessory is designed to be used with profile with 8mm T-slot.</td>
</tr>
<tr>
<td>10</td>
<td>Profile has 10mm T-slot. Connector, fastener, or accessory is designed to be used with profile with 10mm T-slot.</td>
</tr>
<tr>
<td>6→8</td>
<td>Connector or accessory can be used to join profile with 6mm T-slot to profile with 8mm T-slot.</td>
</tr>
<tr>
<td>8→8</td>
<td>Connector or accessory can be used to join profile with 8mm T-slot to profile with 8mm T-slot.</td>
</tr>
<tr>
<td>8→10</td>
<td>Connector or accessory can be used to join profile with 8mm T-slot to profile with 10mm T-slot.</td>
</tr>
<tr>
<td>10→10</td>
<td>Connector or accessory can be used to join profile with 10mm T-slot to profile with 10mm T-slot.</td>
</tr>
</tbody>
</table>

**Metric/English Conversion Chart**

<table>
<thead>
<tr>
<th>Measurement</th>
<th>Multiply</th>
<th>by</th>
<th>to get:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Linear</td>
<td>millimeters (mm)</td>
<td>0.03937</td>
<td>inches</td>
</tr>
<tr>
<td></td>
<td>inches</td>
<td>25.4</td>
<td></td>
</tr>
<tr>
<td></td>
<td>kilometers (km)</td>
<td>0.6214</td>
<td></td>
</tr>
<tr>
<td></td>
<td>miles</td>
<td>1.6093</td>
<td></td>
</tr>
<tr>
<td>Area</td>
<td>millimeters² (mm²)</td>
<td>0.00155</td>
<td>inches²</td>
</tr>
<tr>
<td></td>
<td>inches²</td>
<td>645.16</td>
<td></td>
</tr>
<tr>
<td>Volume</td>
<td>centimeters³ (cm³)</td>
<td>0.06102</td>
<td>inches³</td>
</tr>
<tr>
<td></td>
<td>inches³</td>
<td>16.387</td>
<td></td>
</tr>
<tr>
<td></td>
<td>1 cm³ = 1 milliliter (mL)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Acceleration</td>
<td>meter/second² (m/s²)</td>
<td>39.37</td>
<td>inch/second²</td>
</tr>
<tr>
<td></td>
<td>inch/second²</td>
<td>0.0254</td>
<td></td>
</tr>
<tr>
<td>Velocity</td>
<td>meter/second (m/s)</td>
<td>3.281</td>
<td>feet/second</td>
</tr>
<tr>
<td></td>
<td>feet/second</td>
<td>0.3048</td>
<td></td>
</tr>
<tr>
<td>Mass</td>
<td>kilogram (kg)</td>
<td>2.2046</td>
<td>pounds</td>
</tr>
<tr>
<td></td>
<td>pounds</td>
<td>0.4536</td>
<td>kilogram</td>
</tr>
<tr>
<td>Force</td>
<td>kilograms-f (kgf)</td>
<td>9.807</td>
<td>Newtons (N)</td>
</tr>
<tr>
<td></td>
<td>Newtons (N)</td>
<td>0.10194</td>
<td></td>
</tr>
<tr>
<td></td>
<td>pounds-f</td>
<td>4.448</td>
<td>Newtons (N)</td>
</tr>
<tr>
<td></td>
<td>Newtons (N)</td>
<td>0.2248</td>
<td></td>
</tr>
<tr>
<td>Pressure</td>
<td>bar</td>
<td>14.5</td>
<td>PSI</td>
</tr>
<tr>
<td></td>
<td>PSI</td>
<td>0.069</td>
<td></td>
</tr>
<tr>
<td>Torque</td>
<td>Newton-Meters (Nm)</td>
<td>8.851</td>
<td>pound-inches</td>
</tr>
<tr>
<td></td>
<td>pound-inches</td>
<td>0.11298</td>
<td></td>
</tr>
<tr>
<td>Moment of Inertia</td>
<td>centimeters⁴ (cm⁴)</td>
<td>0.02403</td>
<td>inches⁴</td>
</tr>
<tr>
<td></td>
<td>inches⁴</td>
<td>41.623</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Symbol</th>
<th>What it means</th>
</tr>
</thead>
<tbody>
<tr>
<td>ESD</td>
<td>Profile, connector, or accessory is ESD (Electro-Static Discharge) safe.</td>
</tr>
<tr>
<td>Clean Room</td>
<td>Profile, connector, or accessory is suitable for use in Clean-Room environments and applications.</td>
</tr>
<tr>
<td>NEW</td>
<td>New or significantly improved profile, connector, or accessory included on this page of the catalog.</td>
</tr>
<tr>
<td>≥ or ≤</td>
<td>Greater than or equal to/Less than or equal to. Used to specify the available size range for cut-to-order profiles, e.g. ≥30mm ≤5600mm indicates a minimum ordering length of 30mm and maximum of 5600mm.</td>
</tr>
<tr>
<td>Ø</td>
<td>Indicates diameter, such as in drilled holes or shaft thicknesses.</td>
</tr>
<tr>
<td>designLINE</td>
<td>Item is in our GoTo program and is available for fast delivery from your distributor via the Framing Shop at <a href="http://www.boschrexroth-us.com/framing">www.boschrexroth-us.com/framing</a></td>
</tr>
</tbody>
</table>

Part is finished in silver matt paint
Section 1: Introduction

EcoShape – Excerpts from Mini-Catalog

Tubular Framing System

**EcoShape**

Easy³ – Versatile, efficient, simple

Individual solutions for numerous applications

---

**Easy³ – Versatile, efficient, simple**

This is the EcoShape idea.

Its user-friendly design and its elegant look appeal to a broad range of tastes.

With just a few components and a minimum investment in time and costs, your existing production equipment can be optimized or extended.

EcoShape easily adapts to your specific requirements. You can create the precise solutions you need – and increase productivity.

It’s the ideal combination of efficiency and lean management. Sometimes less is simply more!

---

The data specified above only serve to describe the product. No statements concerning a certain condition or suitability for a certain application can be derived from our information. The information given does not release the user from the obligation of own judgment and verification. It must be remembered that our products are subject to a natural process of wear and aging.
Section 1: Introduction

EcoShape
Shape your future with Rexroth’s new tubular framing system

Convenient planning – instant, easy implementation

Unmatched versatility
EcoShape is unmatched in its versatility: It makes an almost unlimited number of designs possible with just a few components. The only tubular framing system of its kind, it is T-slot enabled and fully compatible with the profiles in Rexroth’s Modular Aluminum Framing System and Manual Production Systems. So you have even more freedom to design professional, custom workstations, material shuttles, and flow racks to meet your needs, as well as many other applications.

- Unique flexibility and versatility for the widest variety of combinations
- Create versatile and uniform applications
- Professionally extend and optimize existing production lines

Strikingly simple
It’s child’s play to create new solutions or expand existing ones with EcoShape. Intelligent connector technology easily accommodates small tolerance differences to make it easier to cut the round tubes directly on site. As a result, you can improve your production continuously with minimal additional effort, adapting quickly to changing requirements in accordance with the Kaizen principle.

- Create the perfect configuration in no time at all with MTpro planning software
- Implement practical applications almost anywhere in record time with only 14 standard components
- Easy to cut, assemble, and handle
- Quickly create reliable and stable connections
- Set up new applications simply, or optimize and expand existing ones with surprisingly little effort

Top efficiency
EcoShape combines unbeatable flexibility with consistent efficiency.

- Implement designs more efficiently using our special MTpro planning software (with 2-D and 3-D display and a parts list generator)
- Configure and assemble directly on-site – saves time and avoids errors (poka yokes)
- Achieve higher stability thanks to optimized profile and connector geometries – with an approximate reduction in weight of over 30% compared to similar steel tube systems
- Create perfect, multi-system combinations with aluminum profiles and Manual Production Systems from Rexroth
- Reduce energy consumption and protect the environment: elements can be reused or recycled
- Ensure safe conductivity of all components thanks to a complete ESD version
Section 1: Introduction

Tubular Framing System

Use the MTpro software to create optimum designs in 2-D or 3-D and perfectly forecast your material requirements with the parts list generator.
Tubular Framing System

EcoShape: D28L round tube and accessories

**D28L round tube**

<table>
<thead>
<tr>
<th>LE No.</th>
<th>L = 5600 mm</th>
</tr>
</thead>
<tbody>
<tr>
<td>50</td>
<td>3 842 541 211</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>LE No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
</tr>
</tbody>
</table>

A = 1.8 cm²  
x = 1.33 cm⁴  
y = 1.33 cm⁴  
Wx = 0.95 cm³  
Wy = 0.95 cm³  
m = 0.48 kg/m

**D28L, N10 round tube**

<table>
<thead>
<tr>
<th>LE No.</th>
<th>L = 5600 mm</th>
</tr>
</thead>
<tbody>
<tr>
<td>20</td>
<td>3 842 541 213</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>LE No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
</tr>
</tbody>
</table>

A = 2.63 cm²  
x = 1.17 cm⁴  
y = 1.97 cm⁴  
Wx = 0.84 cm³  
Wy = 1.41 cm³  
m = 0.71 kg/m

**Slide rail**

<table>
<thead>
<tr>
<th>LE No.</th>
<th>L = 2000 mm</th>
</tr>
</thead>
<tbody>
<tr>
<td>10</td>
<td>3 842 541 196</td>
</tr>
</tbody>
</table>

Material: PVC, gray

**Cap**

<table>
<thead>
<tr>
<th>LE No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>20</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>3 842 541 195</td>
</tr>
</tbody>
</table>

Material: PA 66, black

**D28L threaded sleeve**

<table>
<thead>
<tr>
<th>LE No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>20</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>3 842 541 185</td>
</tr>
</tbody>
</table>

Material: PA 66, black
### Section 1: Introduction

**Tubular Framing System**

**EcoShape: round tube connector**

<table>
<thead>
<tr>
<th>90° connector</th>
<th>No.</th>
<th>3 842 541 173</th>
</tr>
</thead>
<tbody>
<tr>
<td>Incl. mounting material</td>
<td>Material: diecast zinc</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Parallel connector</th>
<th>No.</th>
<th>3 842 541 183</th>
</tr>
</thead>
<tbody>
<tr>
<td>Incl. mounting material</td>
<td>Material: diecast zinc</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>45° connector</th>
<th>No.</th>
<th>3 842 541 175</th>
</tr>
</thead>
<tbody>
<tr>
<td>Incl. mounting material</td>
<td>Material: diecast zinc</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Cross connector</th>
<th>No.</th>
<th>3 842 541 181</th>
</tr>
</thead>
<tbody>
<tr>
<td>Incl. mounting material</td>
<td>Material: diecast zinc</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>0°-90° connector</th>
<th>No.</th>
<th>3 842 541 178</th>
</tr>
</thead>
<tbody>
<tr>
<td>Incl. mounting material</td>
<td>Material: diecast zinc</td>
<td></td>
</tr>
</tbody>
</table>
Tubular Framing System

**EcoShape: round tube adapter**

<table>
<thead>
<tr>
<th>Adapter Type</th>
<th>Part No.</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>N10, 45 adapter</td>
<td>3 842 541 187</td>
<td>Incl. mounting material</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Material: diecast aluminum</td>
</tr>
<tr>
<td>N10, 30 adapter</td>
<td>3 842 541 190</td>
<td>Incl. mounting material</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Material: diecast zinc</td>
</tr>
<tr>
<td>XLlean holder adapter</td>
<td>3 842 541 296</td>
<td>Incl. mounting material</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Material: PA 66, black</td>
</tr>
<tr>
<td>D28L/N10 tube clip</td>
<td>3 842 541 193</td>
<td>Incl. mounting material</td>
</tr>
</tbody>
</table>
Section 1: Introduction

Tubular Framing System

Technical data

Length calculation

Bearing loads and surface loads
Section 1: Introduction

Section 2 Profiles

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30-Series Profiles: 2-14 to 2-19

40-Series Profiles: 2-20 to 2-25

45-Series Profiles: 2-26 to 2-37

50-Series Profiles: 2-40 to 2-42

60-Series Profiles: 2-43 to 2-45
Section 2 Profiles

80-Series Profiles: 2-46 to 2-48

90-Series Profiles: 2-49 to 2-54

100-Series Profiles: 2-55 & 2-56

Specialty Profiles: 2-57 to 2-61
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90° Right Angle Connectors

Die-Cast Gussets
20-Series 3-3 • 30-Series 3-4
40-Series 3-5 • 45-Series 3-6
50-Series 3-7 • 60-Series 3-8
80-Series 3-8 • 90-Series 3-9
100-Series 3-9

Die-Cast Foundation Brackets
3-10 & 3-11

42x60 Sheet Metal Gusset
3-12

Inside-to-Outside Gussets
3-12

Inside-to-Inside Gussets
3-13

Corner Brackets
3-14

Corner Cube Kits
3-15

S6, S8, & S12 Self-Tapping Connection Screws
3-16

M12 Connection Screws and Anti-Rotation T-Blocks
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