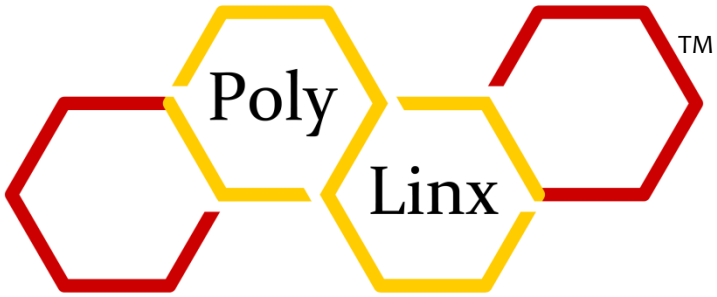

Preliminary Parts Guide

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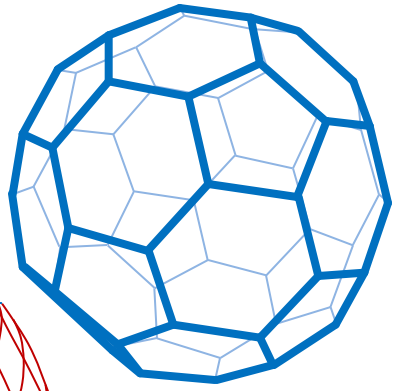
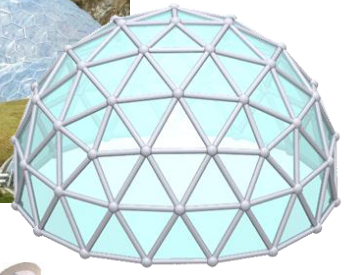
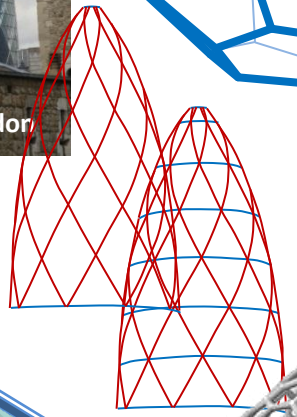
rmurphy@polylinx.com
www.polylinx.com

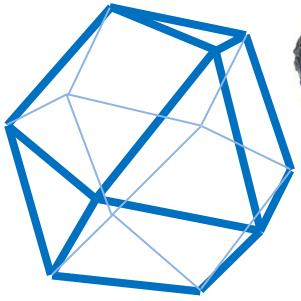
March 14 2012

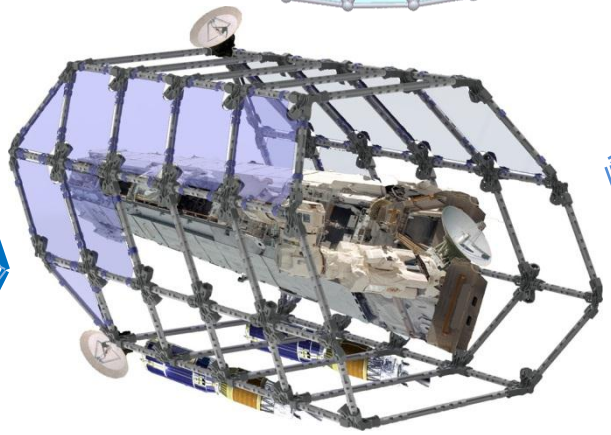
PolyLinx – What Do You Want to Build?

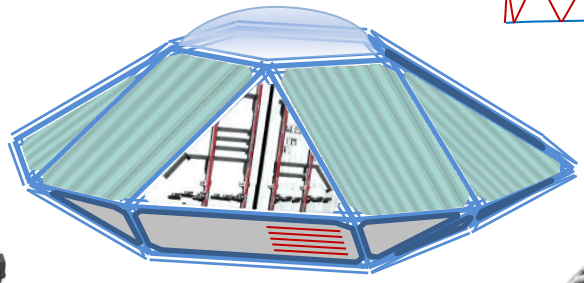


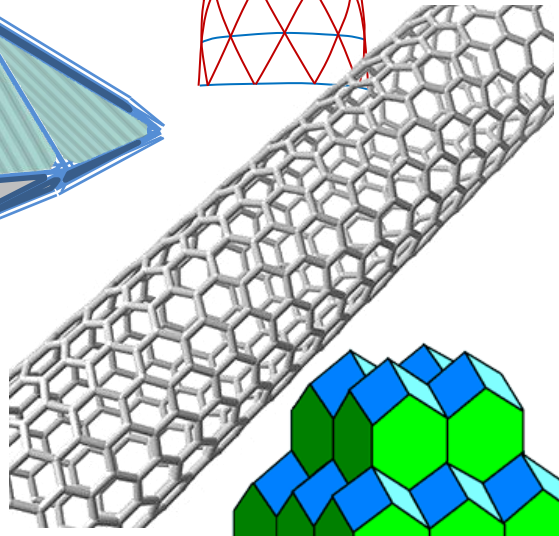


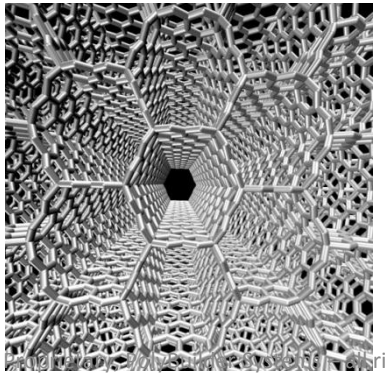


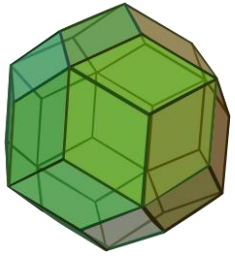










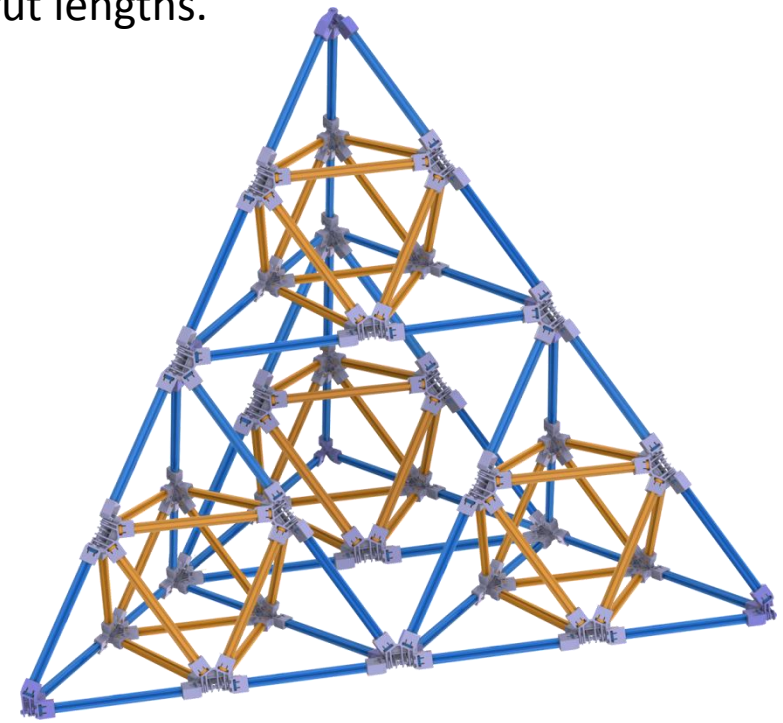


These can be constructed with the existing PolyLinx Hinge-Hub designs

(Exclusive to the hinge-hub.
Additional elements may be required)

It should be mentioned that while several dozen parts are detailed here, only a small handful are used in current model designs.

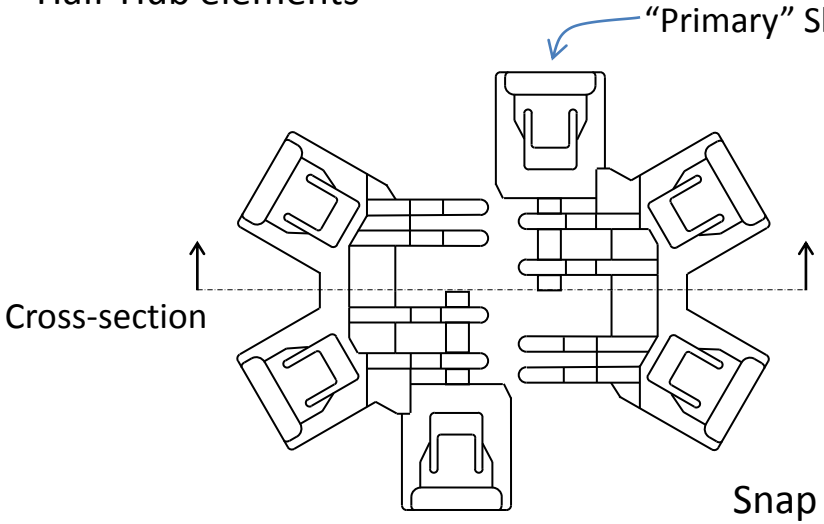
Of complex multi-tiered tetrahedra, stars, nanotubes, the “Hex structures” and “Butterfly structures”, only 7 different parts are used inclusive of 2 different strut lengths.



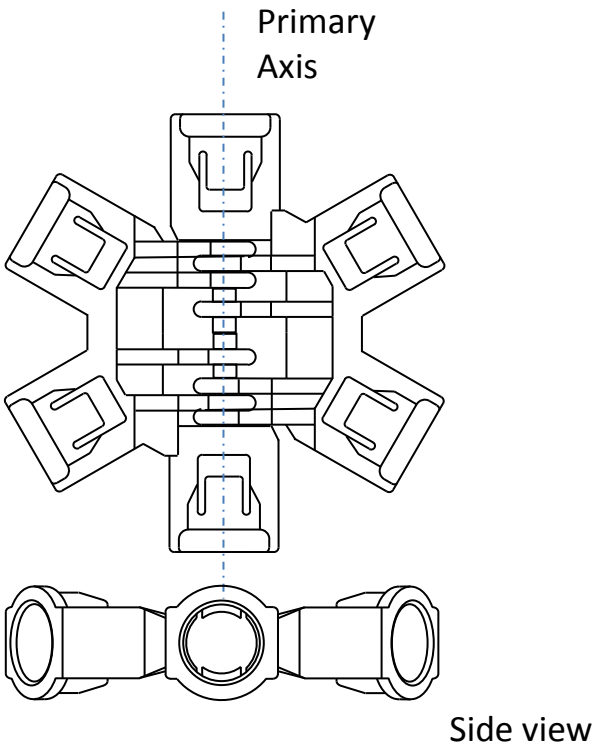
The Hinge-Hub™

The Half-Hub is the primary building block of the PolyLinx Hinge-Hub™ system, with which hundreds of interesting models can be created.

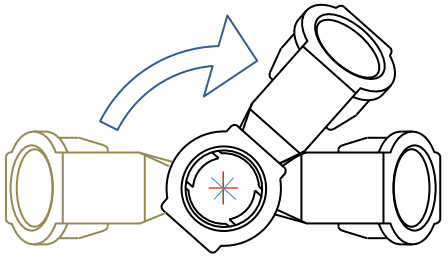
Two identical
Half-Hub elements



Snap them together

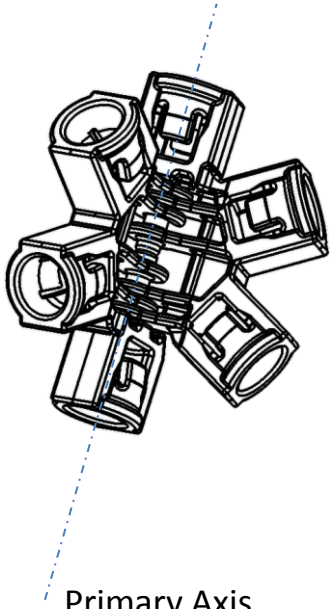


Fold it



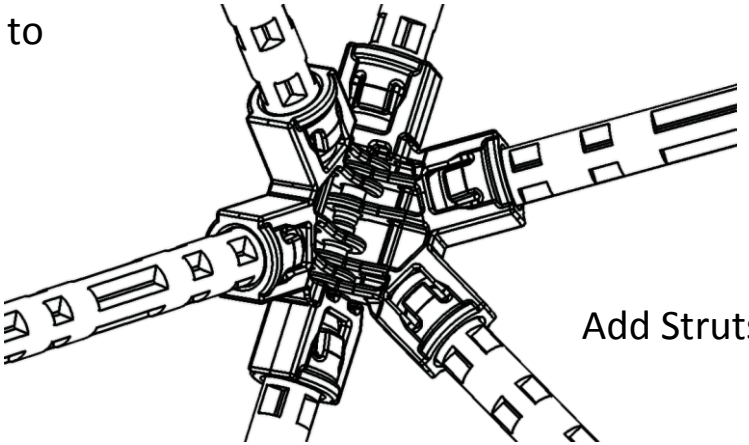
Two Half-Hubs make the Full-Hub

The Hinge-Hub™



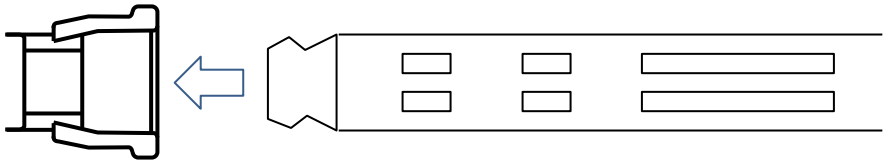
Primary Axis

"Fold" them about their "primary axis" up to +/- 140°



Add Struts

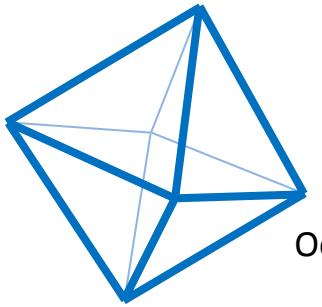
The Strut and Slot: A positive, easily releasable, snap fit.
Accommodates both PolyLinx struts and K'Nex* struts.



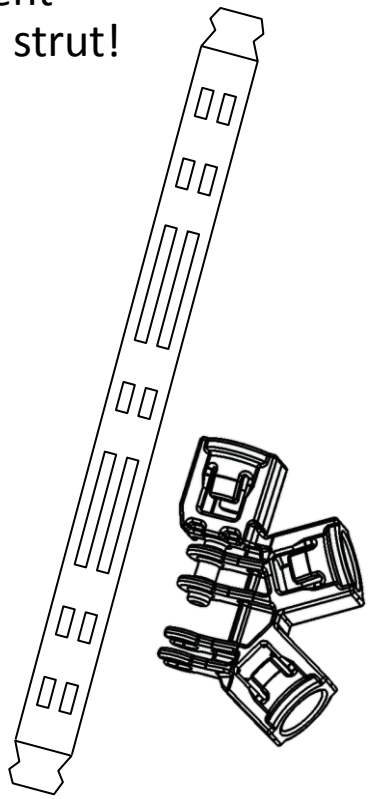
A minor modification to the CAD file will allow the use of low cost extruded struts.

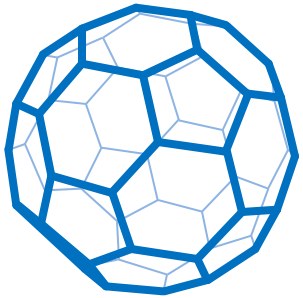
*PolyBuilder Systems makes no claims regarding functionality of K'Nex products

You can build all of these shapes and many many more with only two different elements – the half-hub and the strut!

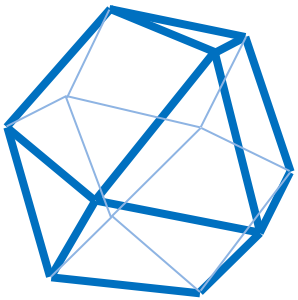


Octahedron

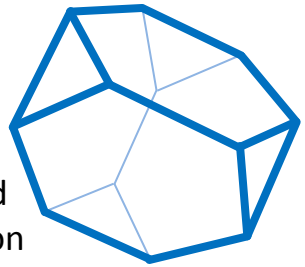




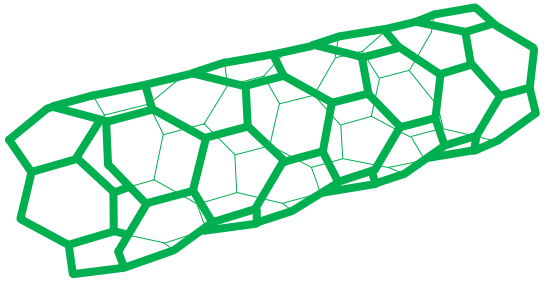
Truncated Icosahedron
(Bucky Ball)



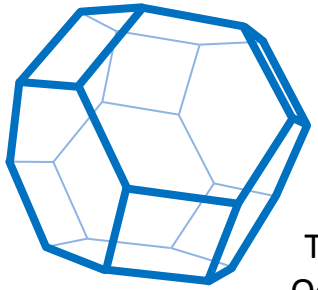
Cuboctahedron



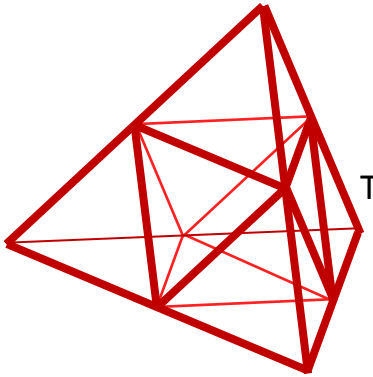
Truncated
Tetrahedron



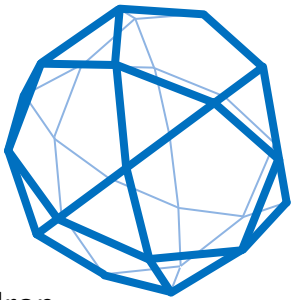
Nanotube



Truncated
Octahedron



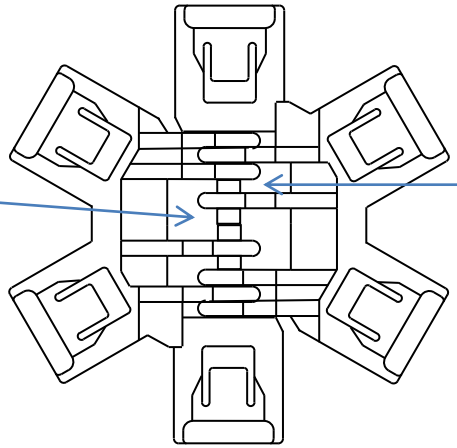
Tetrahedron



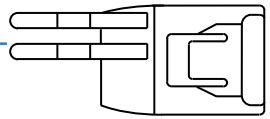
Icosidodecahedron

Secondary Slots

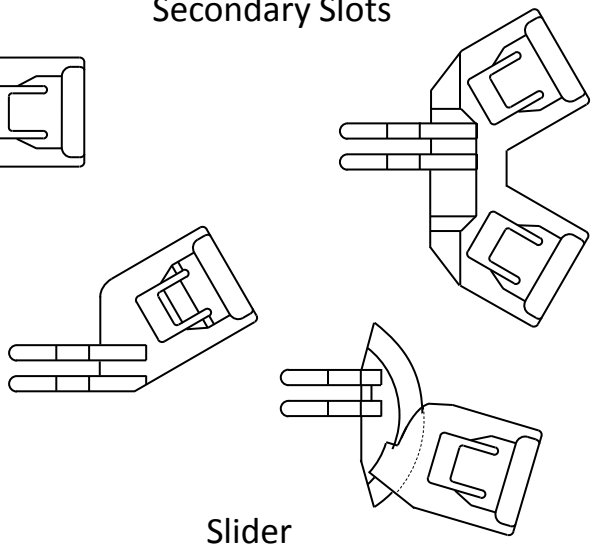
Unused gaps along the primary hinge



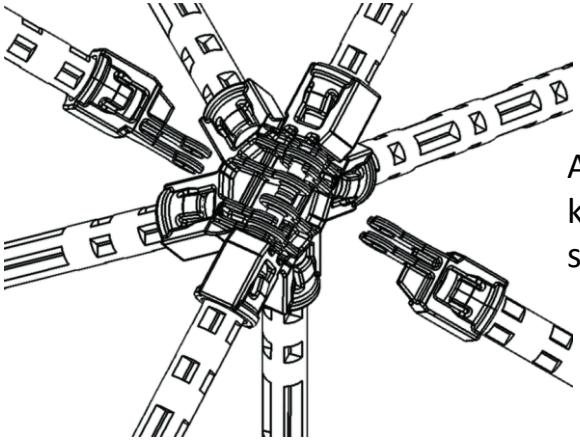
Secondary Slots snap onto the open hinge gaps



A range of Secondary Slots

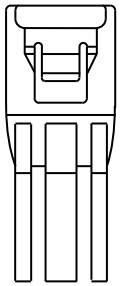


Slider Secondary Slot



As demonstrated in the Star kit, two sets of secondary slots can be accommodated

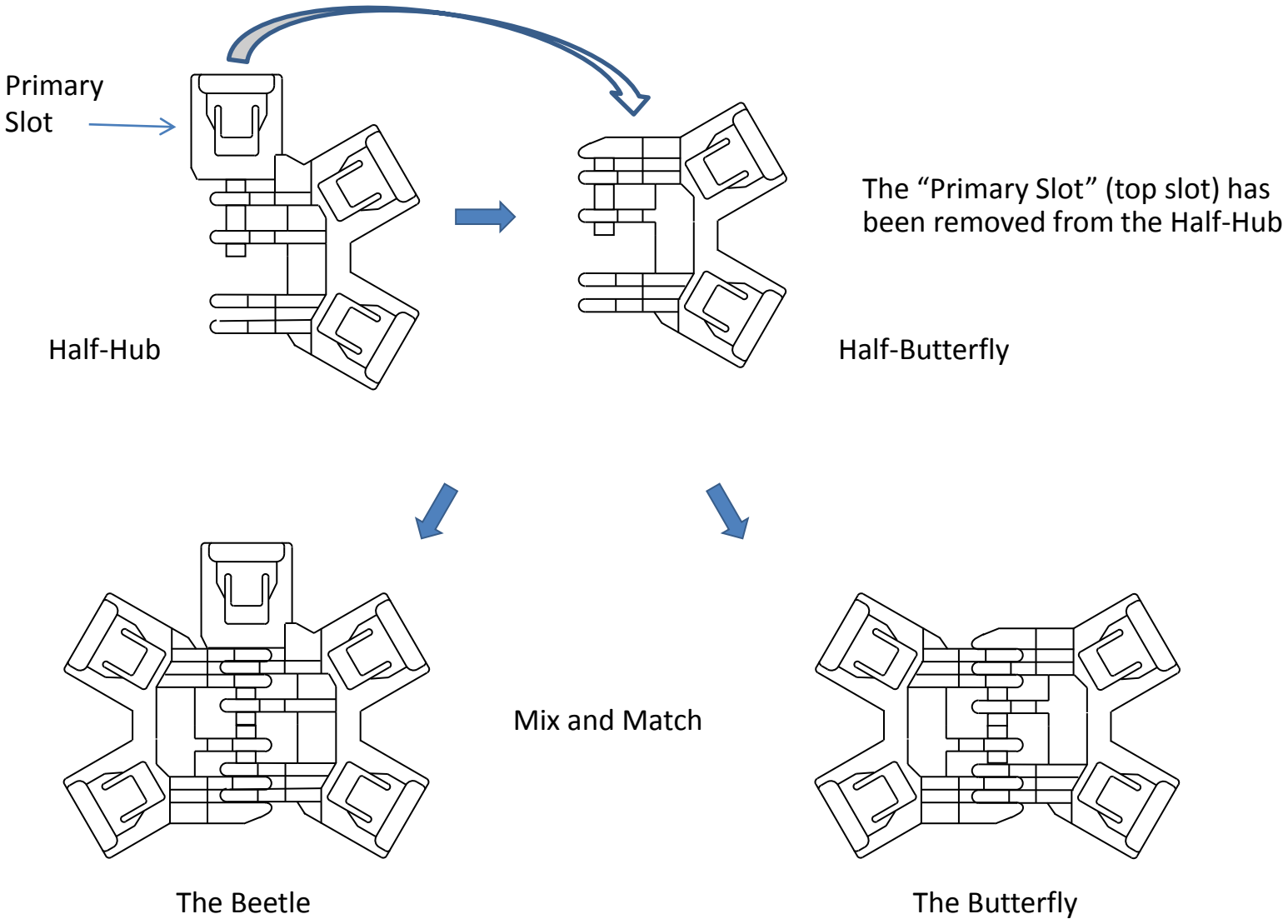
Secondary Clip Slot



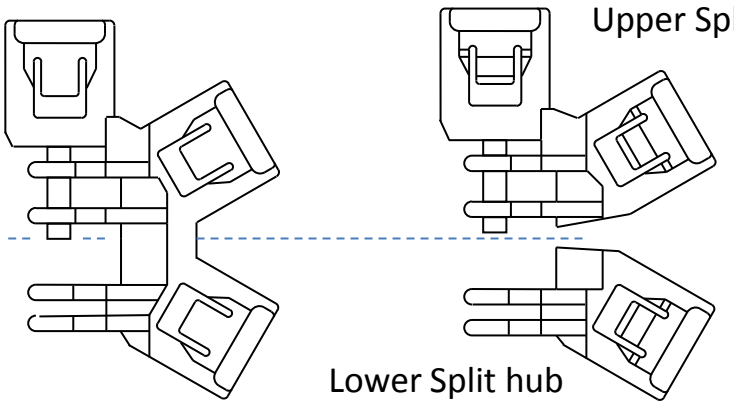
The Secondary Slot allows the addition of more struts to one's designs.

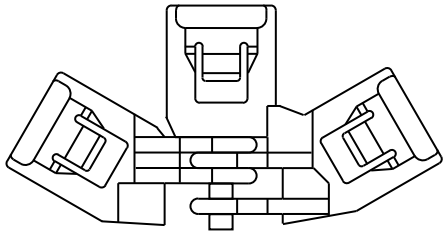
The Half Butterfly

For aesthetics, streamlining the “look” of some of the models, the Butterfly element is added.

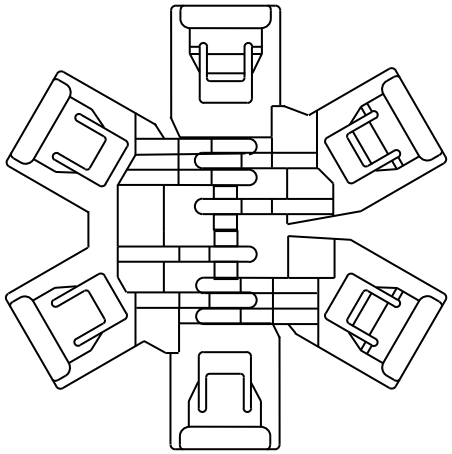


The Split Hub

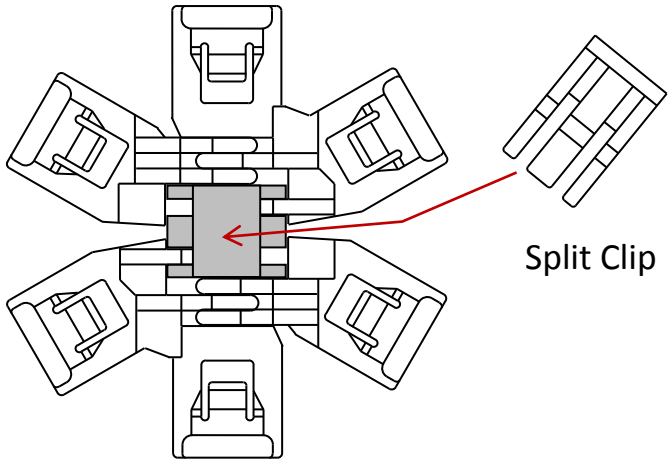




Upper and Lower Split hubs snapped together

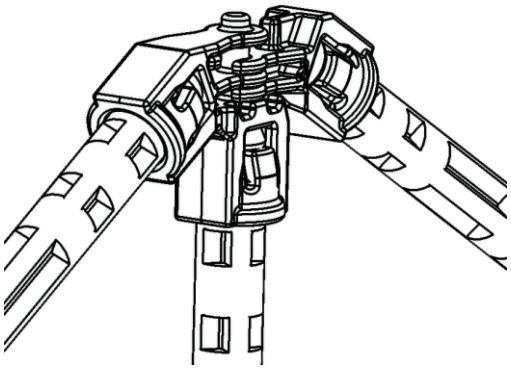


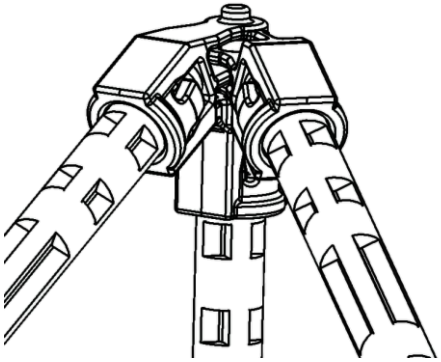
Upper and Lower Split hubs paired with a Half -Hub



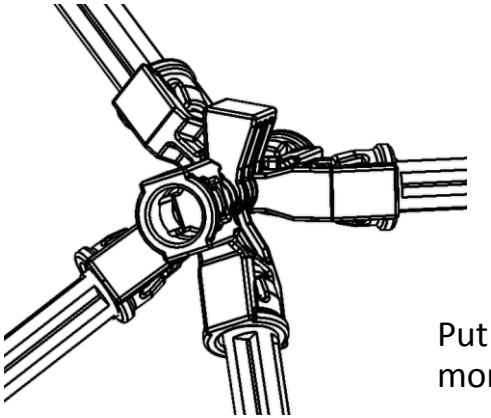
Two sets of Upper and Lower Split hubs paired together with a Split Clip – All 4 segments rotate about the primary axis independent of the others

The Split Hub

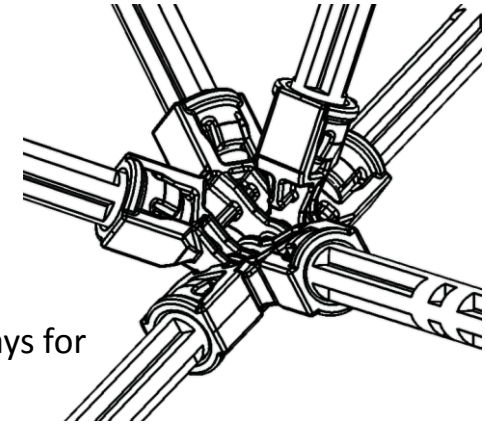




An upper/lower Split Hub Pair is perfect for the tip of a tetrahedron, star, or edge of a nanotube (though the full hub may be used in all of these cases)



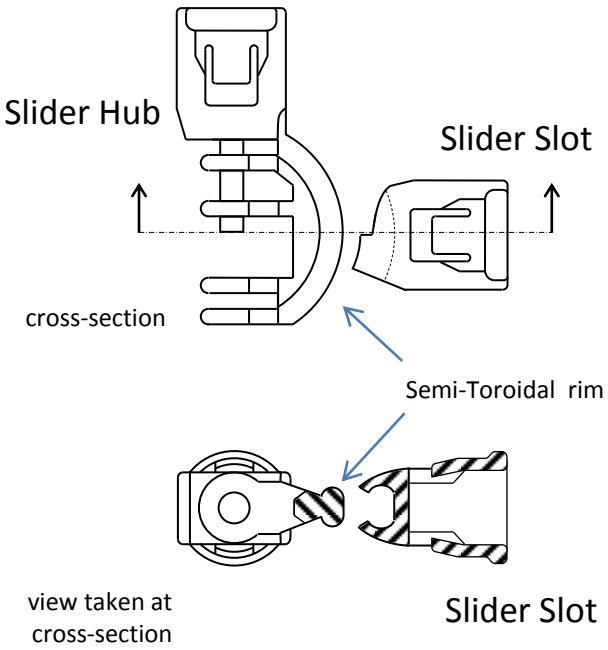
Put them together in other ways for more building opportunities.

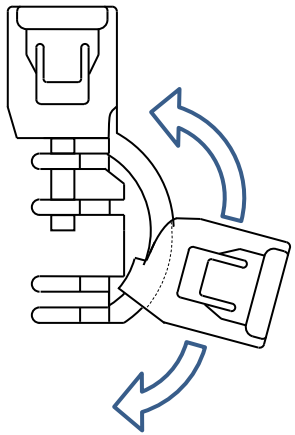


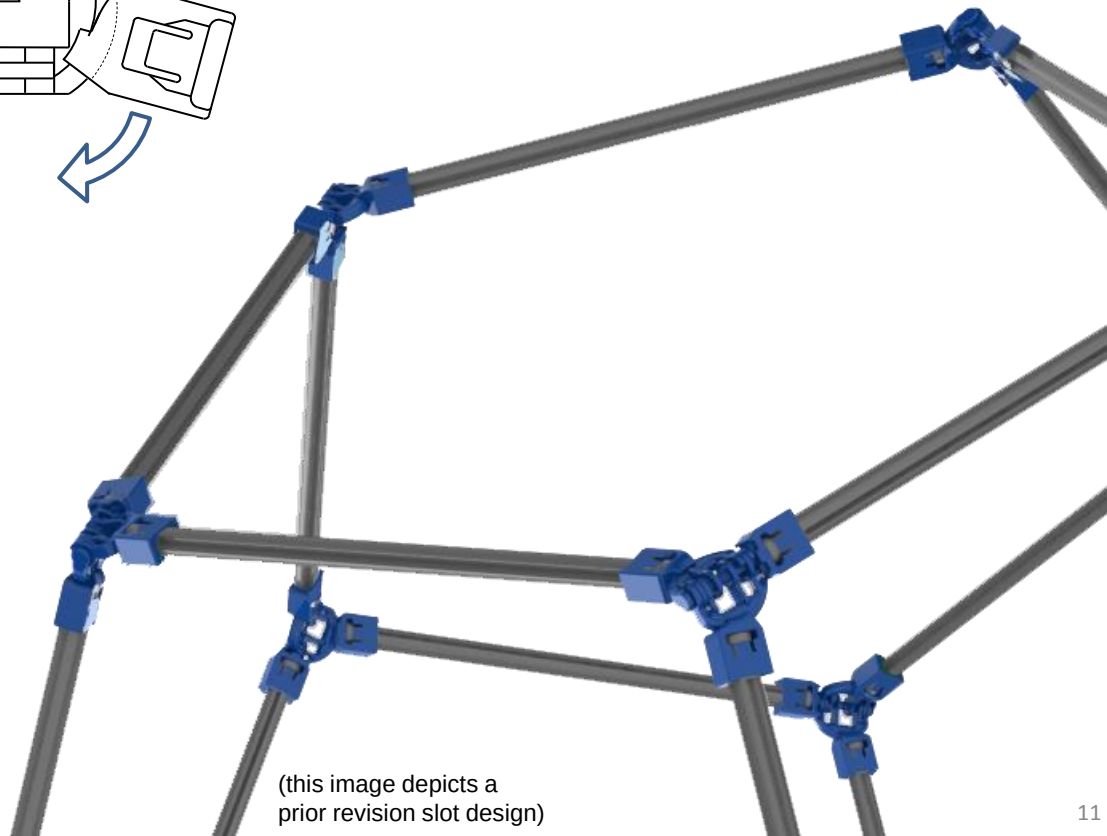
Removing the fixed angle limitations…

The Slider Hub!

Snap on a few slider slots, slide them along the rim of the sider hub to the angle you want, fold the hub. The angles are limitless.

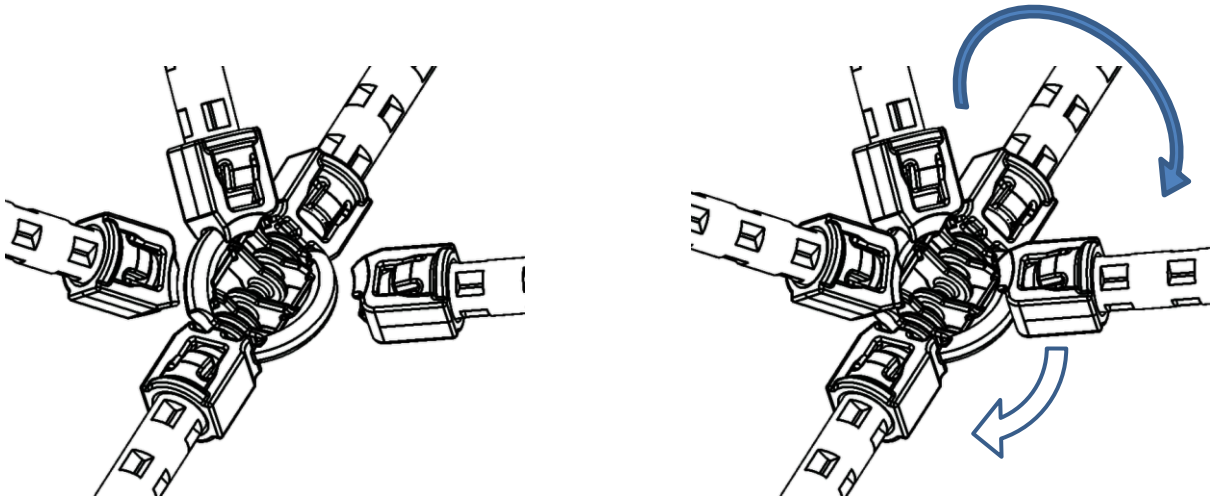




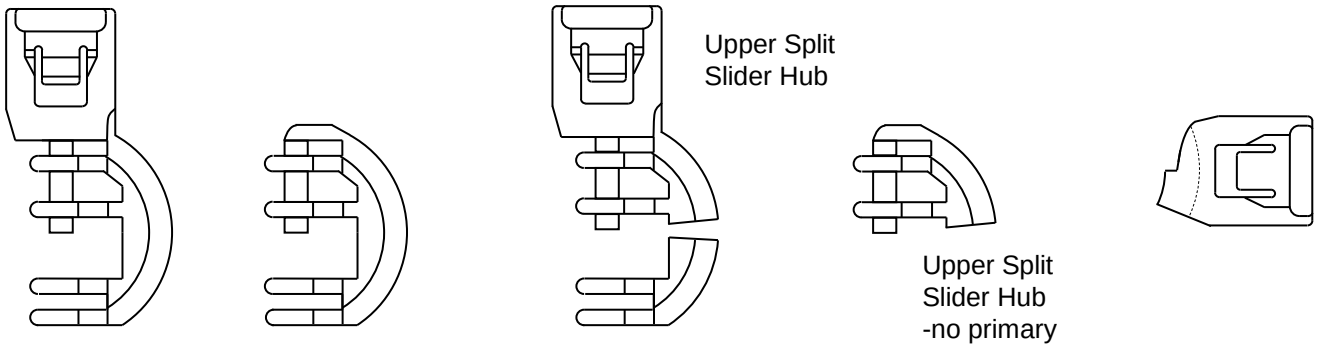


(this image depicts a
prior revision slot design)

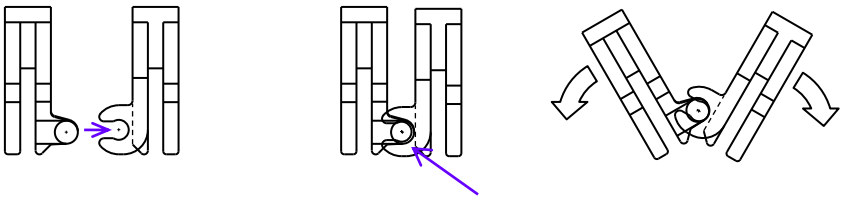
The Slider Hub



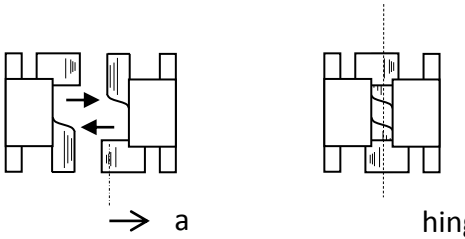
The slider hub provides a second axis of angular freedom. Multiple Slider Slots can snap on/off the hub, and be positioned at arbitrary angles. A range of slider parts have been designed, and can be mixed and matched in near any fashion, including with the fixed angle hinge-hubs.

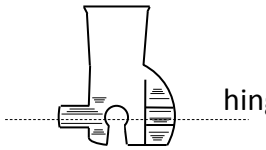


Hinge Clip (advanced builders)

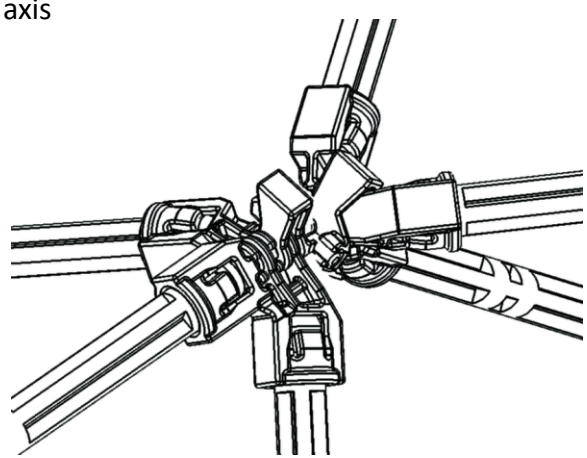


Hinge clip hinge axis

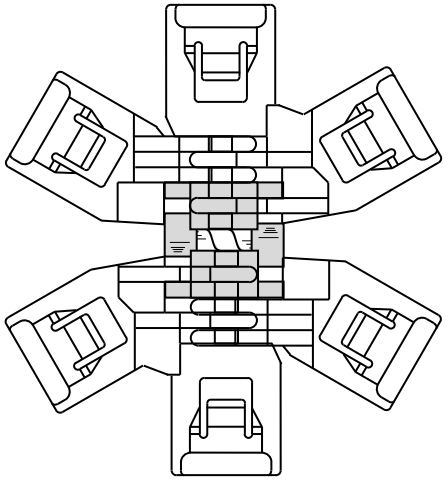




view a



The hinge clip is an advanced building element. It provides a hinge axis orthogonal to that of the primary hinge and the axis of the slider hub. It is comprised of two identical sub-parts that snap to each other, then snap onto the primary hinge.

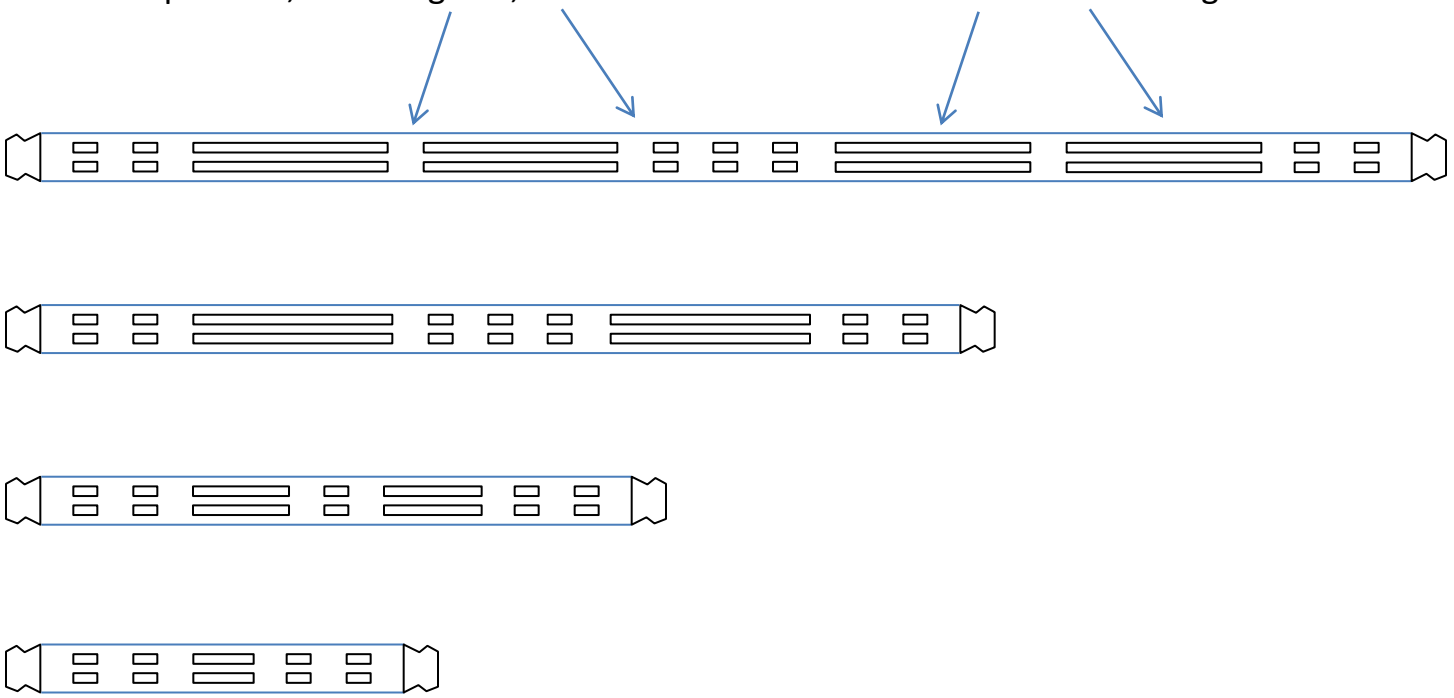


While shown here in use with pair of split hubs, it can also be used with the split slider hub elements.

Struts

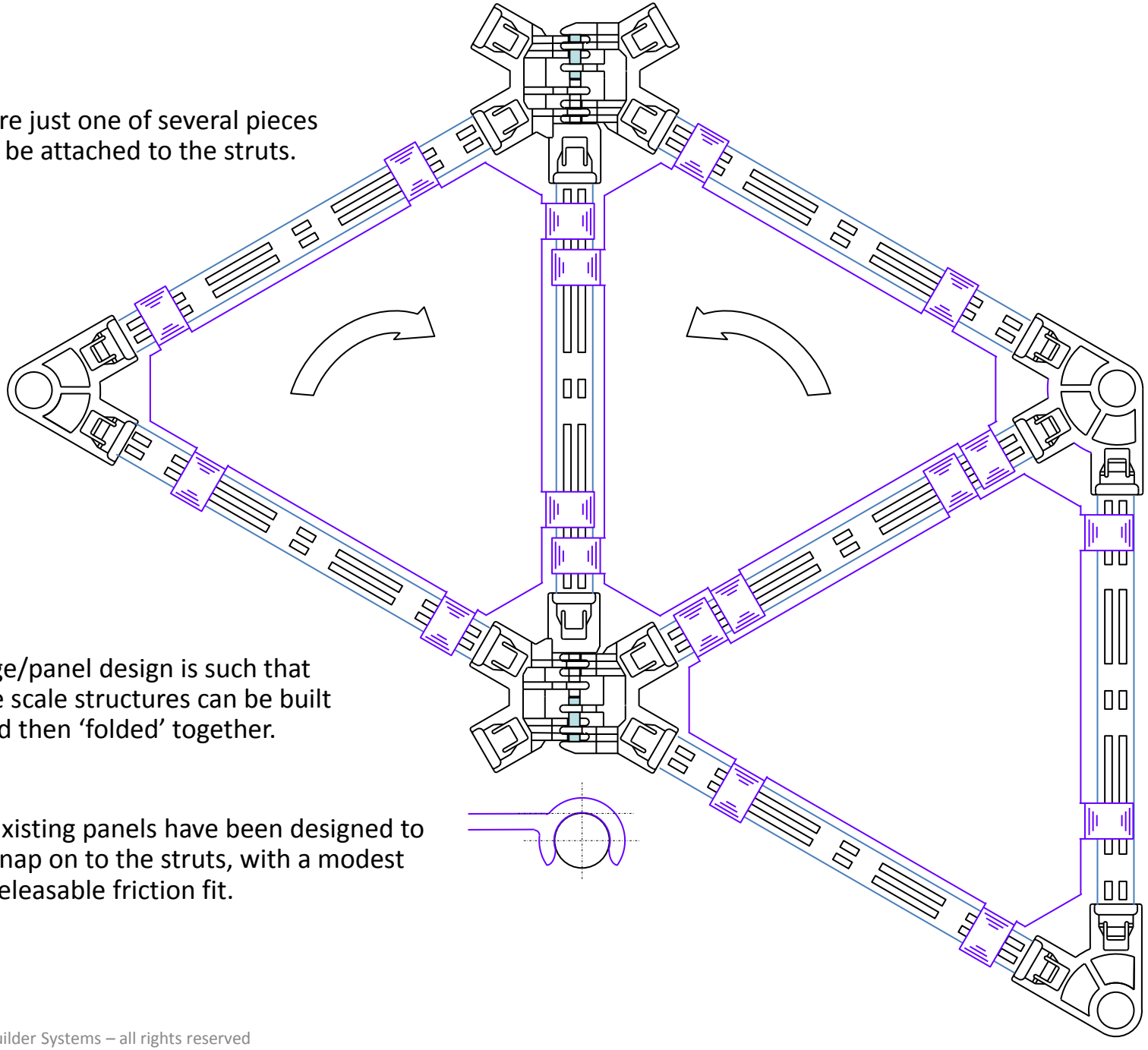
Struts have solid bands to allow clipping on of panels, additional components, action figures, etc.

Struts have spans of non-banded circumference for fixed attachments, such as drive belts and gears.



Panels

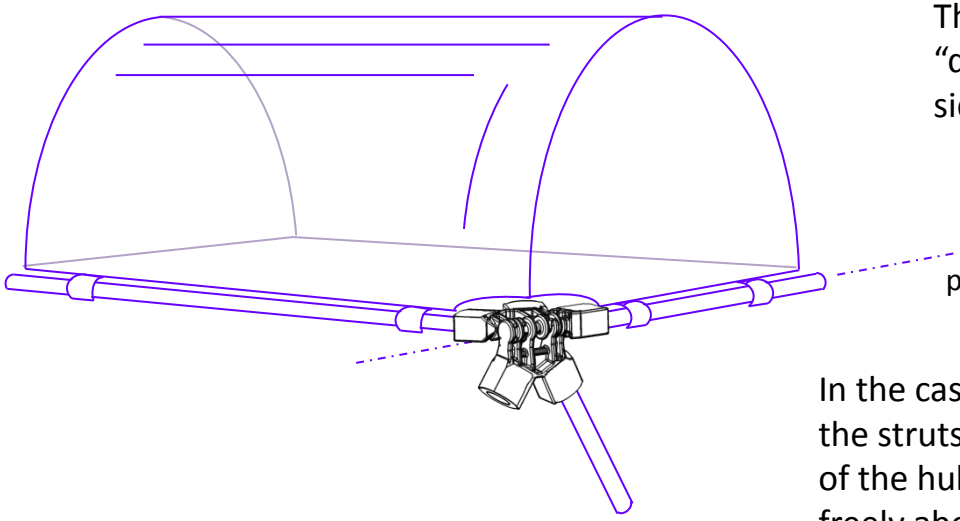
Panels are just one of several pieces that can be attached to the struts.



The hinge/panel design is such that full large scale structures can be built ‘flat’, and then ‘folded’ together.

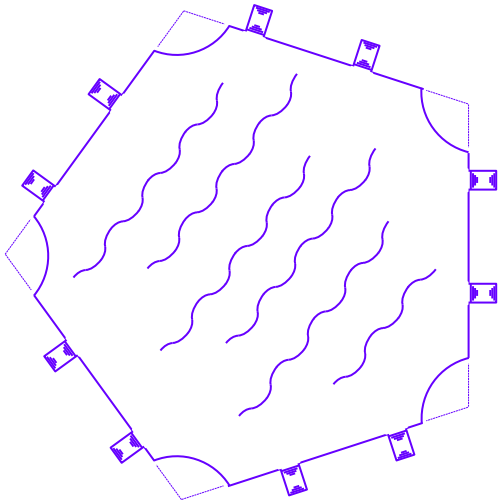
Existing panels have been designed to snap on to the struts, with a modest releasable friction fit.

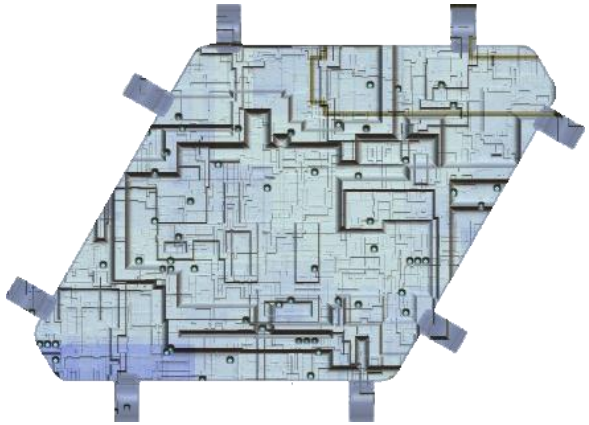
Panels

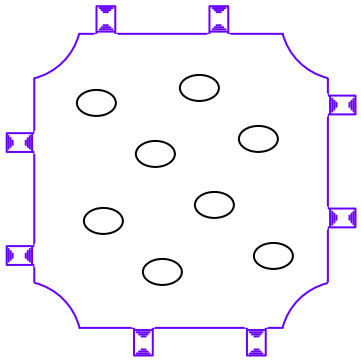


The panels need not be flat. Shown here is a “domed” panel with panel snaps on multiple sides.

In the case of the panel above, note that the panel and the struts it is attached to span a fixed angular section of the hub. Here, the panel and the struts can rotate freely about the primary axis of that hub.

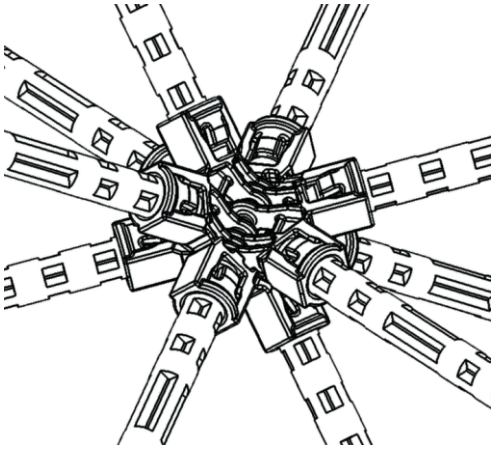




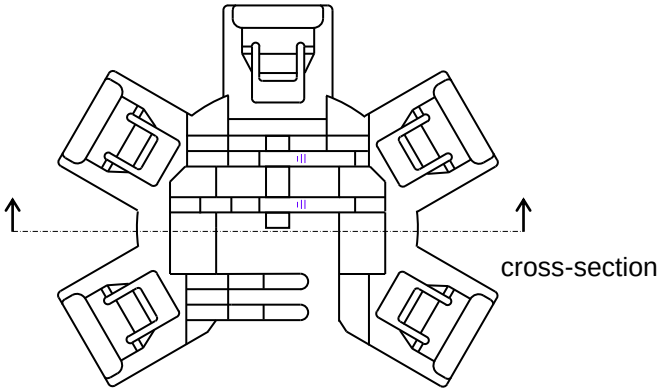


Panels may be opaque, transparent, ‘dragon scaled’, ‘roof tiled’, or, for example, 3D textured for a spaceship. Panel structures could include Lego ‘bumps’ for interconnection.

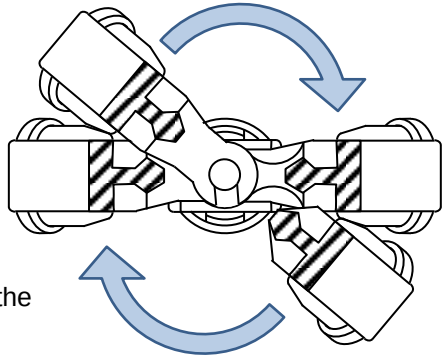
The Scissor Hub



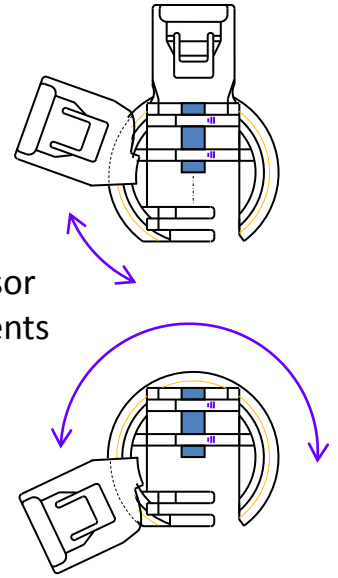
Two Scissor Hub elements, mated, folded.



Two interlocked scissor hub pieces.



View taken at the cross-section



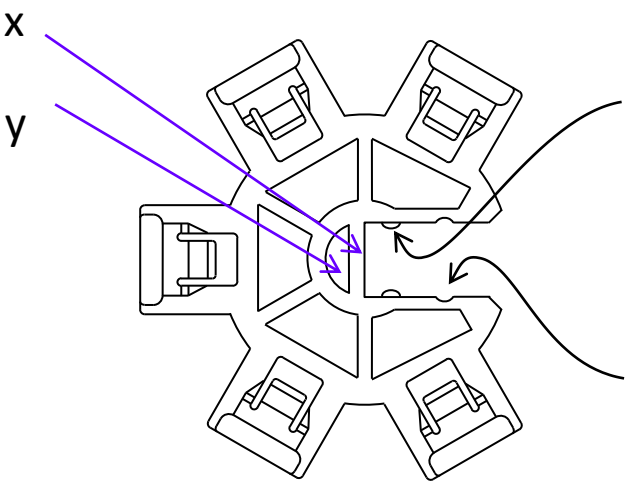
Slider Scissor Hub elements

The Scissor Hub provides the mechanics to construct a range kinetic creations

Fixed Angle Interlocking Hub

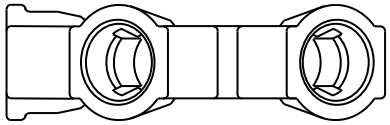
Used where designs with rigid 90° are desired. This hub also provides a direct interconnection with the Basic K'Nex hub, a rigid 90° based element.

The Interlocking Hub is built from two identical hub elements snapped together at right angles to each other.

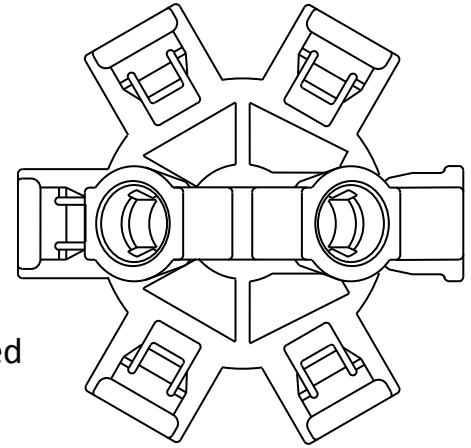


These bumps facilitate the releasably locking of two PolyLinx interlocking slider elements to each other. The bumps on an orthogonally placed complementary element snap over center bar x, resting at y

Indentations facilitate this element to releasably lock onto other manufacturer's elements (eg K'Nex).



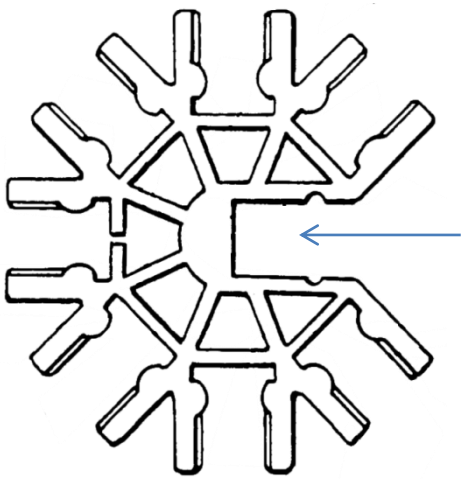
edge view



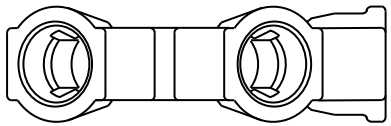
Two hubs snapped together

Fixed Angle Interlocking Hub

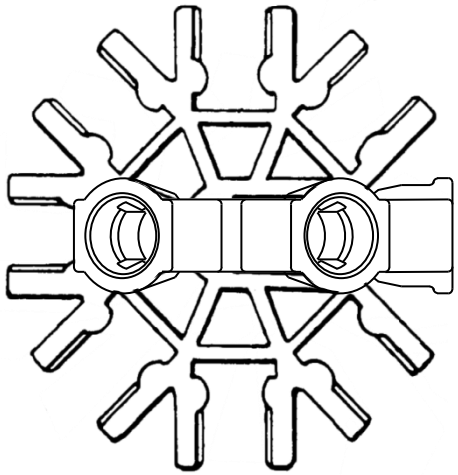
The PolyLinx Interlocking Hub mates with K'Nex* hub elements.



K'Nex hub element



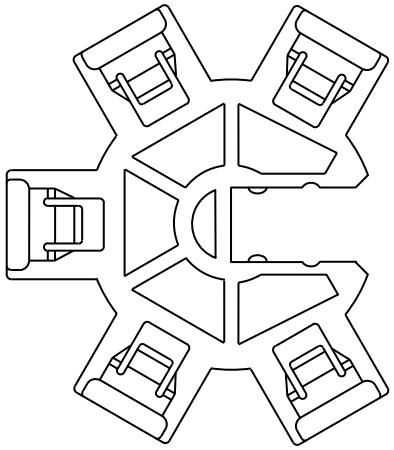
PolyLinx hub element



*PolyBuilder Systems makes no claims regarding functionality of K'Nex products

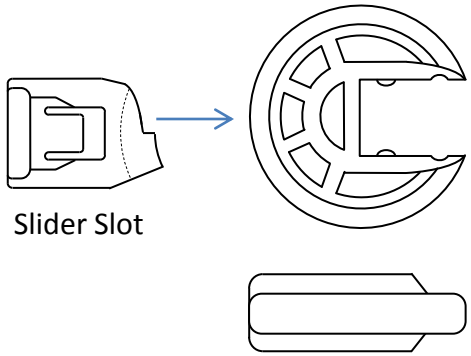
Family of PolyLinx Interlocking Hubs

All Interlocking Hub elements (Half, Full, Sliders…) can be mated with all other interlocking hub elements, PolyLinx and K'Nex.

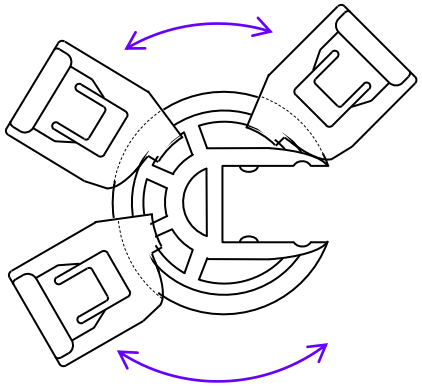


Full

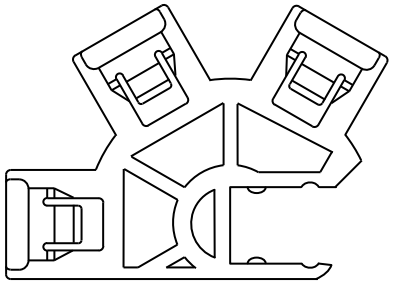
Slider Interlocking Hub



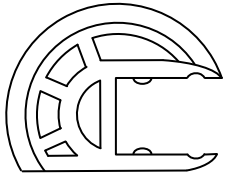
Edge View



The slider slots can be positioned nearly anywhere along the toroidal contour.



Half



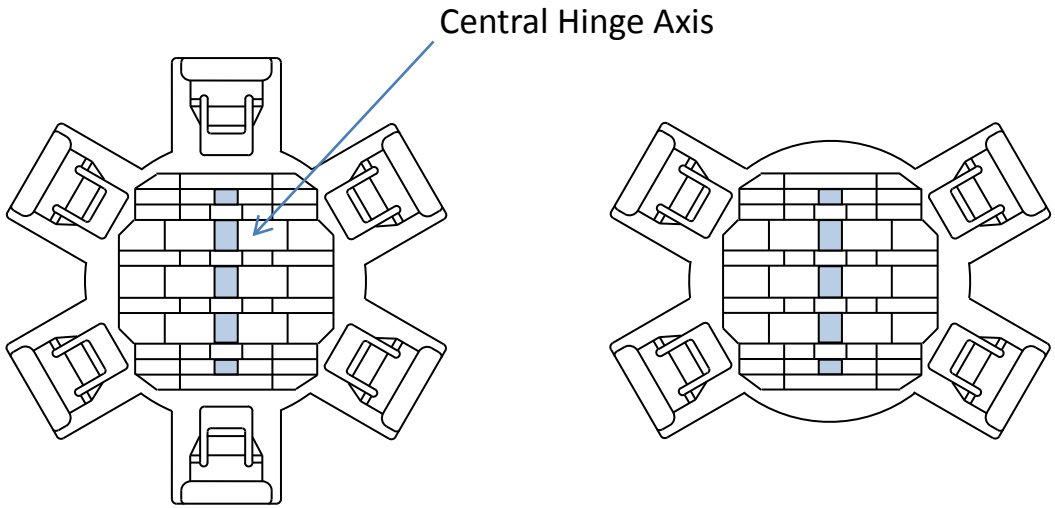
Half Slider Interlocking Hub

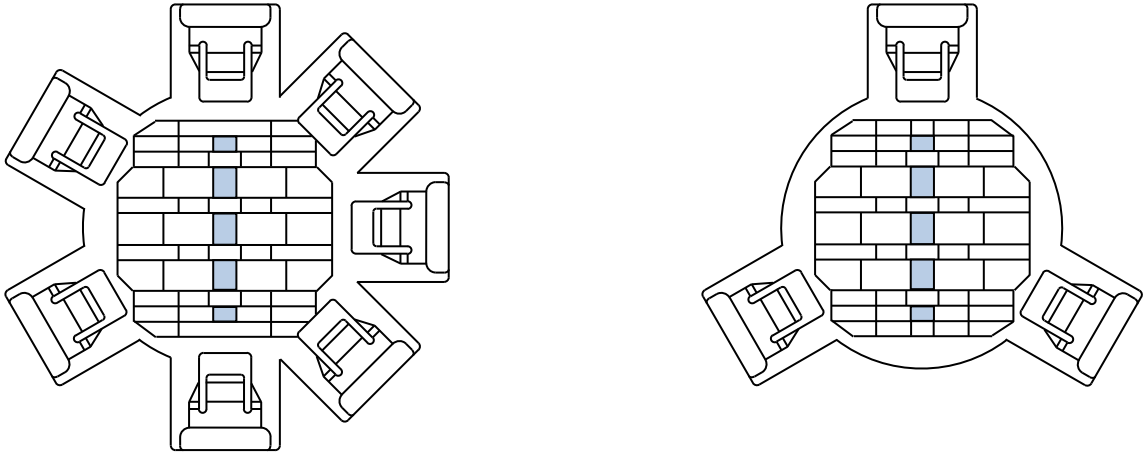
Fixed Angle Connectors

These are provided for those cases where rigid mid wall regions are desired.

Similar to those covered in the expired K'Nex patent, however, these include a hinge core, allowing additional Hinge-Hub elements to be attached.

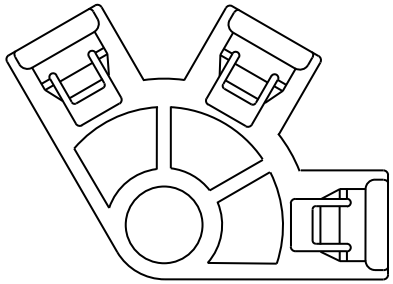
In most cases, these elements will accept both multiple Lower Split hubs AND Secondary hub elements.

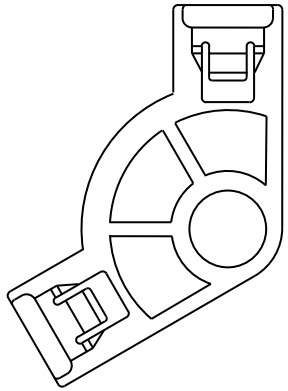


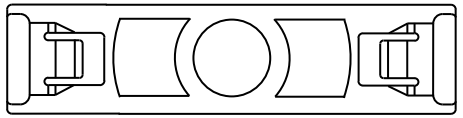


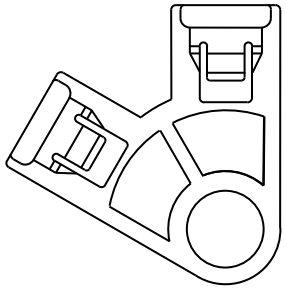
Fixed Angle Connectors

While in general these are not required for any designs, they provide for a better aesthetics in some cases.



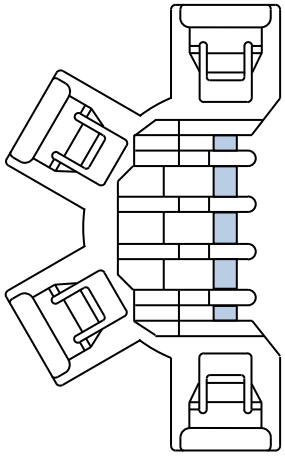


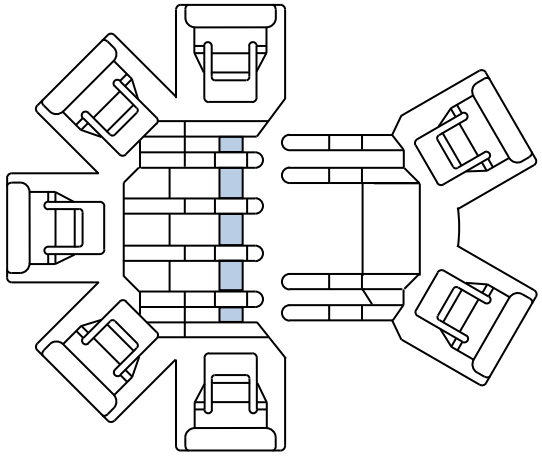




A Few Additional Elements

45° spaced hinge-hub with dual primary

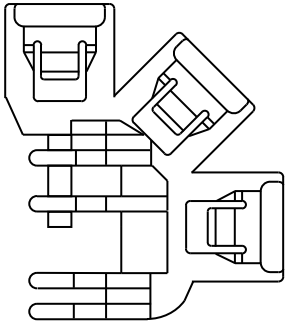


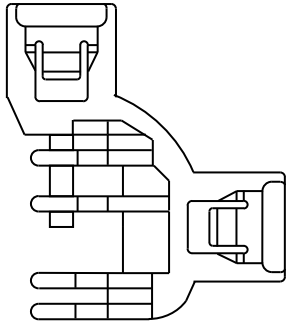


Mirrored Butterfly

These elements together are excellent for architectural construction, roof/eave –lines, bridges, etc. Note that secondary slots may be used with this pair.

45° / 90° spaced hinge-hubs





Mates with Standard hub elements