

**DAEDALUS TECHNOLOGIES, INC.**  
**MAKING TECHNOLOGY MORE ACCESSIBLE**

***DAESSY Mounting System***  
***Frame Clamps for Wheelchair Mounting***

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### **Frame Clamp Inner Piece Styles**

When ordering a complete DAESSY Wheelchair mounting assembly the size and shape of the wheelchair frame to which the mount will be attached must be measured and indicated on the order form. Wheelchair manufacturers vary tubing size and shapes within model lines and within model years, the name of the wheelchair is not sufficient information to determine what Frame Clamp Inner Pieces is required. If no size is indicated on the order a 1" round clamp will be included by default; Exchanges are subject to fees.

The Frame Clamp Inner Pieces are available to fit a wide range of wheelchair tubing styles – round, rectangular and elliptical. Standard Frame Clamp Inner Pieces may be used on wheelchair frames that have a clear length of 2" to 2 1/2" of straight frame tubing accessible. Wheelchair tubing with dimensions between the available Frame Clamp sizes may be shimmed with Adapter Sleeves. If only a shorter distance of wheelchair frame tubing is accessible, or the tubing is very slightly curved it may be possible to use a Side Mount Inner Piece. For wheelchairs that do not have any tubing accessible for a Frame Clamp to clamp around, a Bolt-on Adapter may be required. A small number of wheelchairs will require Model Specific Frame Clamps or Bolt-on Adapters.

**The Frame Clamp Inner Pieces are manufactured to precise sizes. Frame Clamps must be installed on the tube size for which they are designed.**

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### ***Standard Frame Clamp Inner Pieces***

Standard Frame Clamp Inner Pieces (UFCxxxxIP) consist of a Cap and Body that fit around the selected location of the wheelchair frame and are secured together with two bolts. The Cap is drilled with two countersunk unthreaded boltholes. The Body has two threaded boltholes and an axial hole that holds the threaded half of a Swivel Clamp. The outer face of the Frame Clamp Inner Piece is machined with circular grooves.

The selected location where the Frame Clamp Inner Piece will be attached should be accessible from both the outside and the inside of the wheelchair frame. About 2" to 2 1/2" of wheelchair frame tubing must be clear for attachment of the Frame Clamp.

## Common Round Sizes

Common sizes of round tubing found on wheelchair frames are listed, along with the part code for the Standard Frame Clamp Inner Piece that will fit.



Common Round Sizes of Frame Clamp Inner Pieces	
Tube diameter	Part Code
7/8"	<a href="#">UFC875IP</a>
1"	<a href="#">UFC1000IP</a>
1 1/8"	<a href="#">UFC1125IP</a>
1 1/4"	<a href="#">UFC1250IP</a>
1 1/2"	<a href="#">UFC1500IP</a>
2"	<a href="#">UFC2000IP</a>
1" with only 1 1/4" clear length	<a href="#">UFC1000IPMOD</a>

The UFC1000IPMOD is a modified version of the 1" Frame Clamp Inner Piece available for situations when less than three inches of wheelchair frame tubing are clear for attachment. The Modified 1" Round Frame Clamp Inner Piece requires only 1 1/4" clear length of wheelchair frame tubing.

## Square and Rectangular Sizes

Common sizes of square and rectangular tubing found on wheelchair frames are listed below, along with the part code for the Standard Frame Clamp Inner Piece that will fit.



Square or Rectangular Frame Clamp Inner Pieces	
Tube dimensions	Part Code
1" x 1"	<a href="#">UFC1000SIP</a>
3/4" x 1 1/2"	<a href="#">UFCRTIP</a>
1 3/8" x 2 1/4"	<a href="#">UFCSTIP</a>
Variable 1"-3" x 1"-3"	<a href="#">UFCMFIP (for assessment only)</a>

The [Frame Clamp Inner Piece Multiple Fit \(UFCMFIP\)](#) is a four-piece assessment tool that will fit a wide range of square or rectangular tubing from 1" to 3" in either dimension.

The UFCMFIP cannot be used on wedge shaped or round tubing. It is very important that the bolts in the Multiple Fit Inner Piece are screwed in at least 8 turns before they pull tight, however the bolt ends must not touch the bottom of the threaded holes. Different lengths of bolts will be needed to span the full size range of the UFCMFIP. The bolts must be tightened evenly. The UFCMFIP is not intended for permanent installation with a mounting assembly and is best used only for assessment purposes.

## Adapter Sleeves

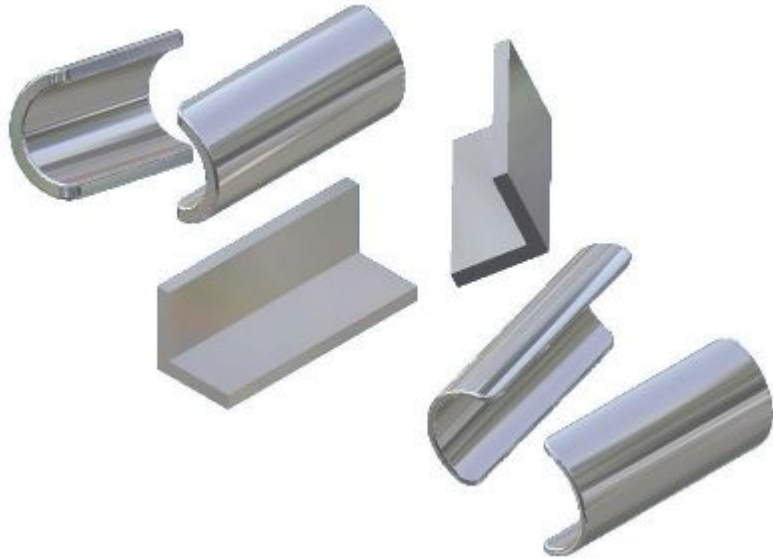
Round tubing sizes between any Standard sizes or below 7/8" diameter are fitted using Adapter Sleeves. Rectangular and Square sizes between Standard sizes, and some non-Standard tube shapes are fitted using Adapter Sleeves.

The available Standard sizes of round Adapter Sleeves are:

- 7/8 inch to 3/4 inch
- 1 inch to 3/4 inch
- 1 inch to 7/8 inch
- 1 1/2 inch to 1 1/8 inch
- 1 1/2 inch to 1 1/4 inch

Right-angle Adapter Sleeves for use on square and rectangular tubes are available in the following Standard sizes:

- 1 inch to 7/8 inch
- 1 inch to 3/4 inch
- 1 3/8 x 2 1/4 inch to 1 x 2 inch
- 1 3/8 x 2 1/4 inch to Oval



Adapter Sleeves are available in custom sizes on special order. Contact Daedalus Technologies, Inc., for more information.

Adapter sleeves may not be used in Side Mount or Front Side Mount Inner Pieces, or with certain wheelchair model specific Frame Clamp Inner Pieces.

## Inner Piece Adapter

The Inner Piece Adapter (IPA) is a DAESSY component that can be bolted to any flat surface with two 1/4" holes exactly 1 1/2" apart. The outer face of the Inner Piece Adapter is machined with circular grooves that interface with the outer components of the Frame Clamp Assembly. The IPA is an extremely versatile component that is used in numerous ways to solve difficult mounting applications.

## Side Mount Sizes



When a seat pan restricts access to the upper edge of the wheelchair frame tubing, it may be possible to use a Side Mount Frame Clamp Inner Piece, which requires no clearance on the topside of the tube and only 1 1/4" clearance on the bottom side. Side Mount Frame Clamps consist of an unthreaded Cap and a threaded Body, which are often silver in colour, and an Inner Piece Adapter that is black. The Side Mount Cap and Side Mount Body each have a cutout, or 'jaw', which seats on the wheelchair frame. This cutout is offset from the axis center of the Side Mount Inner Piece, requiring no clearance on the topside of the wheelchair tubing.

There are two styles of Side Mount Inner Pieces. The standard style, UFCxxxxSMIP, has a Side Mount Cap and Side Mount Body of equal size held together with three bolts that can only be accessed from the interior of the wheelchair frame. An Inner Piece Adapter bolts

to the Side Mount Body to provide an interface with the outer components of the Frame Clamp Assembly. If the interior of the wheelchair is not accessible a Front Side Mount Inner Piece (xxxxFSMIP) is available.

Side Mount Frame Clamp Inner Pieces are also available to fit elliptical tubing,

Side Mount Frame Clamp Inner Pieces		
Wheelchair tube Diameter	Side Mount Inner Piece	Front Side Mount Inner Piece
7/8"	UFC875SMIP	875FSMIP
1"	UFC1000SMIP	1000FSMIP
Elliptical	UFCOVSMIP	



## Bolt-on Adapters

Some wheelchairs do not have tubing onto which a Frame Clamp Inner Piece can be attached. A Bolt-on Adapter may attach to partially accessible frame tubing or pre-existing boltholes in the body of the wheelchair.

Standard Bolt-on Adapter Part Code	
Multi-hole 3" Bolt-on Adapter with Inner Piece Adapter	<a href="#">MH3/IPA</a>
Multi-hole 3" Round Tube Bolt-on Adapter with Inner Piece Adapter	<a href="#">MH3R/IPA</a>
Centre Multi-hole 3" Adapter with Inner Piece Adapter	CM3/IPA

Both the Multi-hole 3" Bolt-on Adapter and the Multi-hole 3" Round Tube Bolt-on Adapter have a row of seven countersunk unthreaded holes for attachment to a variety of different wheelchairs. The seven boltholes are spaced 1/2" centre to centre with a distance of 3" from the first to the last hole. The Inner Piece Adapter (IPA) can be affixed wherever necessary on the MH3 Adapter along the two rows of threaded boltholes. The CM3/IPA has the unthreaded countersunk holes in the centre row of the array.

In situations where a Standard Bolt-on Adapter cannot be used a custom Bolt-on Adapter can often be made, [contact Daedalus Technologies, Inc](#) for information.

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## Frame Clamp Outer Pieces

**Note: The correct outer piece for any standard mount is included implicitly in a standard order, and does not need to be specified separately in an order. Outer pieces may be ordered as separate components, for example, to replace assessment kit components or for retrofitting of existing mounts**

The Frame Clamp Outer Piece supports the Vertical or Side Tube of a DAESSY Mounting Assembly. The style of the Frame Clamp Outer Piece is determined by the choice of mounting assembly. Frame Clamp Outer Pieces fall into three general categories: Standard, Rear Folding, and Removable. In addition to the Outer Piece, some mounts will require a matching Index Clamp that controls the position of the Vertical Tube.

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### **Standard Outer Pieces for Standard Mounts**

#### **Frame Clamp Outer Piece (UFCOP) and Index Clamp (IC1)**

The Frame Clamp Outer Piece (UFCOP) used with the DAESSY Rigid Mount (DRM1) and the DAESSY Folding Mount (DFM2) has one face machined with circular grooves to complement a Frame Clamp Inner Piece. An axial hole provides access to the Swivel Clamp holding the UFCOP to inner components of the Frame Clamp Assembly. A diametric hole through the UFCOP hold the Vertical Tube. Adjacent to the Vertical Tube hole is an Index Pin that fits in any of the holes in the Index Clamp IC1 to prevent the Vertical Tube rotating. The three holes in the Index Clamp allow the DAESSY Rigid Mount (DRM1) to be lifted slightly up, rotated away from the user and re-set in a position that allows access to the user.



#### **Locking Swing-Away Outer Piece (LSAOP) and Index Clamp (ICLSA)**

The Locking Swing-Away Outer Piece (LSAOP) has a hole for the Vertical Tube of the mount and three holes with tapered plastic inserts for the Locking Pin of the Locking Swing-Away Index Clamp (ICLSA). A face on the side of the LSAOP is machined with circular grooves to attach to the OP end of an Offset Link (O3L). The threaded end of a Swivel Clamp is retained in the center of the grooved face. The Locking Pin of the ICLSA, when located into any of the holes of the Locking Swing-Away Outer Piece, prevents the Vertical Tube rotating. The Cable Release disengages the Locking Pin to permit the mount to be swung away.



## **Rear Folding Outer Pieces**

### **Rear Folding Adapter and Tube Mount (RFA+RTHTM)**



The Side Tube of the DAESSY Rear Folding Mount is held in a Tube Mount (RTHTM) bolted to the outer side of the Rear Folding Adapter (RFA). The inner side of the RFA is machined with circular grooves to mate with the inner components of the Frame Clamp Assembly, and a central hole to hold the unthreaded end of a Swivel Clamp. In a standard configuration the Side Tube is permanently attached to the wheelchair. The Rear Folding Adapter can be adapted for quick removal from the wheelchair with the addition of a Removable Frame Clamp Assembly

### **Lockable Rear Folding Adapter and Tube Mount with Offset Link and Lock Mechanism (LRFA+RTHTM+O3L(L/R))**

The Side Tube of the DAESSY Lockable Rear Folding Mount is held in a Tube Mount (RTHTM) bolted to the outer side of the Locking Rear Folding Adapter (LRFA). The inner side of the LRFA is machined with circular grooves to mate with an Offset Link (O3L), or with other Frame Clamp components. Two threaded boltholes in the center of the grooved face receive the bolts of the Swivel Clamp connecting the LRFA to the inner components of the Frame Clamp Assembly; usually an Offset Link is installed here. A blue Lock Mechanism on the upper end of the LRFA locks the Side Tube in place so that it cannot rotate at the LRFA. In a standard configuration the Side Tube is permanently attached to the wheelchair. The LRFA can be adapted for quick removal from the wheelchair with the addition of a Removable Frame Clamp Assembly



## **Removable Outer Pieces**

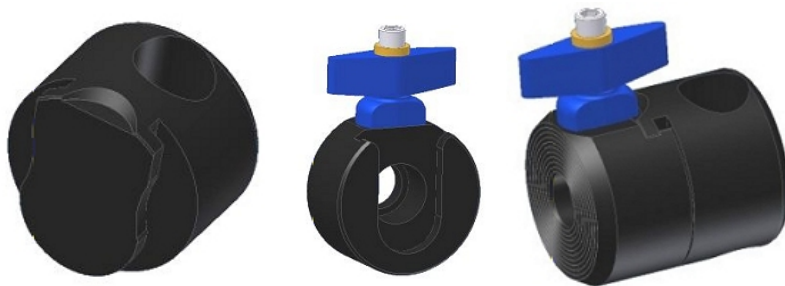
Removable Outer Pieces perform two functions:

- Adaptation for use on tilting seat systems
- Easy removal from the wheelchair.

Removable Outer Piece versions are available for all DAESSY Mounting Assemblies except the DAESSY Locking Swing-Away Mount (DLSA7).

### **Removable Outer Piece and Receiver (ROP+RFCR)**

The Removable Outer Piece and Receiver (ROP-RFCR) replace the Frame Clamp Outer Piece (UFCOP) and Index Clamp (IC1) in supporting the Vertical Tube on the DAESSY Rigid Mount ROP Version (DRM1ROP) and DAESSY Folding Mount ROP Version (DFM2ROP).



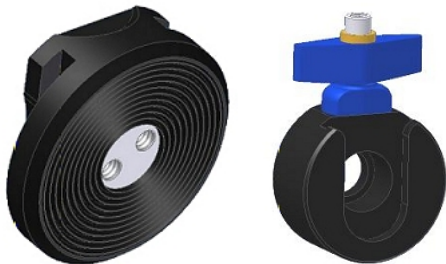
One face of the Removable Frame Clamp Receiver (RFCR) is machined with circular grooves to match with the inner components of the Frame Clamp Assembly. An axial hole through the RFCR holds the unthreaded end of a Swivel Clamp. A blue Locking Knob used to secure the Removable Outer Piece (ROP).

The Removable Frame Clamp Receiver may be positioned on any angle; it is not necessary for the Locking Knob to be on the topside of the Frame Clamp. The Removable Outer Piece (ROP) slides on to the Vertical Tube and provides height adjustment. A slotted face fits into the Removable Frame Clamp Receiver. When installed and locked into position the ROP-RFCR provides a secure attachment for use on tilting seat systems.

The ROP Versions of the DAESSY Rigid Mount and DAESSY Folding Mount cannot be lifted slightly to swing away, and must be removed completely to gain access to the user.

### **Removable Frame Clamp Assembly for Rear Folding Mounts (RFCI+RFCR)**

The Removable Frame Clamp Assembly (RFCI-RFCR) can be added into the Frame Clamp of a DAESSY Rear Folding Mount DRFM6 or the DAESSY Lockable Rear Folding Mount DLRFM8 to enable easy removal of the mount from the wheelchair. The RFCI and RFCR are additional components and do not replace any of the standard parts.



One face of the Removable Frame Clamp Receiver (RFCR) is machined with circular grooves to match with the inner components of the Frame Clamp Assembly. An axial hole through the RFCR holds the unthreaded end of a Swivel Clamp. A blue Locking Knob used to secure the Removable Frame Clamp Insert (RFCI), which is connected to the inner face of the Rear Folding Adapter (RFA or LRFA). The Removable Frame Clamp

Receiver may be positioned on any angle; it is not necessary for the Locking Knob to be on the topside of the Frame Clamp.

Adding the Removable Frame Clamp Assembly to a DRFM6 or DLRFM8 will move the Rear Folding Adapter and Side Tube a further 1 3/4" away from the side of the wheelchair.

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## Connecting the Frame Clamp Components

In some straightforward applications of the [DAESSY Rigid Mount](#) and [DAESSY Folding Mount](#) it will be possible to connect the Frame Clamp Outer Piece directly to the Frame Clamp Inner Piece with one Swivel Clamp. However in many situations the Outer Piece will be displaced from the Frame Clamp Inner Piece location. This displacement may be necessary to:

- Achieve sufficient clearance for the folding movements of the mount assembly
- Avoid interference with other wheelchair fittings
- Position the Outer Piece in the best location for access to the mounted device

Displacement or offset of the Outer Piece is achieved primarily with [Offset Links](#) and [Frame Clamp Spacers](#). All DAESSY Frame Clamp components are designed for firm attachment at any angle with a system of [grooved faces](#) and [Swivel Clamps](#).

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### ***Circular Grooved Faces***



The adjoining faces of all the parts for a Frame Clamp Assembly have circular grooves to give extra friction against movement when assembled. The grooves on an Inner Piece engage with the grooves on an Outer Piece but will not engage with the grooves on another Inner Piece. Offset Links and Frame Clamp Spacers have the letters IP stamped into the metal beside the grooves that attach to the Inner Piece and OP stamped into the metal beside the grooves that attach to the Outer Piece.

**Caution: All the grooved faces must be correctly matched and engaged before the Swivel Clamp bolts are tightened. When the grooved faces are correctly matched it will be possible to turn the mated components in a circle, but they will not slide across each other at the grooved face.**

### ***Swivel Clamps***

Swivel Clamps are used to connect parts of a Frame Clamp Assembly. The unthreaded head end of a Swivel Clamp has two 1/4" holes. The threaded end is also sometimes called the nut end of the Swivel Clamp and is threaded to receive two 1/4" UNC bolts. The standard bolt length provided with a Swivel Clamp is 1". The longer bolts needed to use the Swivel Clamp with a Frame Clamp Spacer (UFCSPCR) are supplied with the



spacer. Always use the supplied Swivel Clamp bolts.

The threaded end of the Swivel Clamp should be engaged with a minimum of 4 full turns of each of the two bolts. The ends of the bolts should not protrude appreciably beyond the face of the Swivel Clamp nut end. Bolts should be tightened alternately to achieve the best grip.

In some cases it may be necessary to use the long arm of the 3/16" Allen Key to reach the heads of the Swivel Clamp bolts within the axial hole of the Frame Clamp Outer Piece. A Tommy Bar is provided to extend the short end of the Allen Key to allow sufficient torque to be applied. The Tommy Bar should not be used to extend the long arm of the 3/16" for tightening any bolts.

## **Offset Links**

### **Standard Offset Link – O3L**

One Offset Link provides three inches of offset between the location of the Frame Clamp Inner Piece and the position of the Frame Clamp Outer Piece. In most cases the Offset Link can be set at any angle, thus the horizontal distance between the Inner Piece and the Outer Piece may be any measure between zero and 3 inches.



The grooved faces of the O3L are marked IP at one end and OP at the other. When two Offset Links are connected together, the IP end of one is attached to the OP end of the other. Each Offset Link is 1/2" thick and will move the Outer Piece this distance further away from the wheelchair attachment location of the Inner Piece.

One Offset Link is always used in the Frame Clamp Assembly of the Locking Swing Away Mount DLSA7 and provides the only method of front-to-back positioning of this mount and of attachment for the Inner and Outer Pieces. One Offset Link is always used on the Locking Rear Folding Adapter of the Lockable Rear Folding Mount DLRFM8 and provides the only method of attachment to the Frame Clamp Inner Piece. Additional Offset Links may be used with either mount assembly. Offset Links can also be used to obtain the correct position of the Rear Folding Adapter of the DRFM6 or Locking Rear Folding Adapter of the DLRFM8 to allow unobstructed rear folding motion.

## Single Sided Offset Link – O3LS

The Single Sided Offset Link O3LS has the grooves for the Inner and Outer Pieces both on the same side. When the O3LS is used the Inner Piece is attached facing inwards towards the frame of the wheelchair and the Outer Piece is located directly in line with the Inner Piece and does not protrude as far as a standard Frame Clamp Assembly. Single Sided Offset Links may be used with the Lockable Rear Folding Mount DLRFM8 to position of the LRFA closer to the wheelchair.

### **Caution – Offset Link Angles:**

**Offset Links (O3L) and Single Sided Offset Links (O3LS) that display a Serial Number greater than #406000 may be connected at any angle provided the grooved faces are correctly matched and seated.**

**Any Offset Link or Single Sided Offset Link displaying a Serial Number less than #406000, or displaying no Serial Number, is an older design and is subject to limitations on the connection angle.**

**Two older design Offset Links must not be connected directly together at an angle less than 135°. An older design Offset Link must not be directly connected to a Rear Folding Adapter (RFA) at an angle less than 135°.**

**If a Frame Clamp Spacer (UFCSPCR) is installed between two older design Offset Links or between an older design Offset Link and an RFA, the components may be connected at any angle.**

## Frame Clamp Spacer – UFCSPCR

The Frame Clamp Spacer (UFCSPCR) is 3/4" thick and a maximum of two Frame Clamp Spacers can be used to move an Outer Piece 1 1/2" further away from the wheelchair attachment locations. One side of the Frame Clamp Spacer has grooves to complement an Inner Piece and the other side to complement an Outer Piece. The Frame Clamp Spacer can be used in combination with the Offset Link (O3L).



## Right Angle Spacer - UFC90

An additional spacer component is the Right Angle Spacer (UFC90) which provides a 90 degree change in the plane of the grooved faces of the Frame Clamp components. This is useful when the only available mounting location on the wheelchair is perpendicular to the side of the chair.

