3 Methods for Installing a Cable Carrier Vertically

When working with a cable carrier system such as an igus® energy chain®, there are a number of options for installation. For vertical applications in particular, two main configurations, hanging or standing, are the most common. However, less conventional options like a zig-zag style install can be used in certain circumstances.

For all of these configurations, it is important to pay close attention to how the cables are laid, separated, and secured within the carrier. However, the vast differences in design require careful consideration of the unique attributes of each.

In this tech talk, learn important factors and expert advice for installing vertical cable carrier systems.
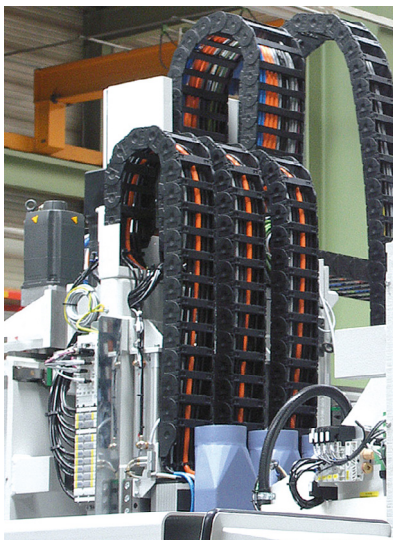
A vertical standing Energy chain® application

Vertical Standing

Vertical standing applications are often used for vertical access in metal-cutting machine tool applications, as well as in pick-and-place machines, among many others.

Important Factors

One of the most important factors in a vertical standing application is how the cables are laid within and secured at the end points of the carrier. It is critical to ensure that all cables and hoses are able to bend freely and have proper strain relief at both ends of the carrier.

It is also important to remember that mounting brackets must be attached so that the carrier does not bow out. Locking mounting brackets, or one-sided locking mounting brackets are available for a vast range of different energy chains®. For standing vertical applications in particular, locking KMA mounting brackets are highly recommended, as they are able to attach flush to the machine. Proper use of these brackets will eliminate unwanted camber, or the curve in the unsupported length of the carrier, maximizing the service life of the cable carrier.

Lateral Acceleration

If lateral acceleration occurs in a vertical standing application, the energy chain® should be supported along the outer radius. For taller standing applications, it is generally recommended that at minimum the first three links of the outer radius be supported. For more extreme heights and weights, it is always recommended to support the entire outer radius.

Learn more at www.igus.com/energychains

tech talk
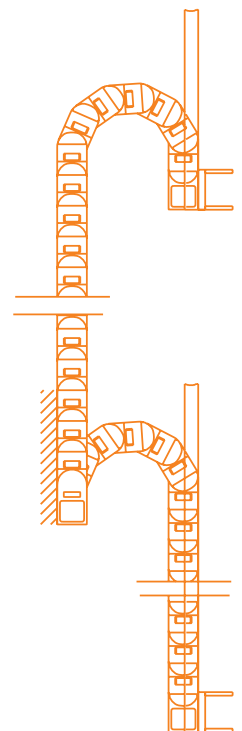
Expert Advice

1. Consult with a sales engineer who can assist with all combined aspects of your application, including the load, stroke height, bend radii, and cable carrier type.

2. If a cost-saving solution is required, contact igus® to inquire about combining horizontal and vertical movements.
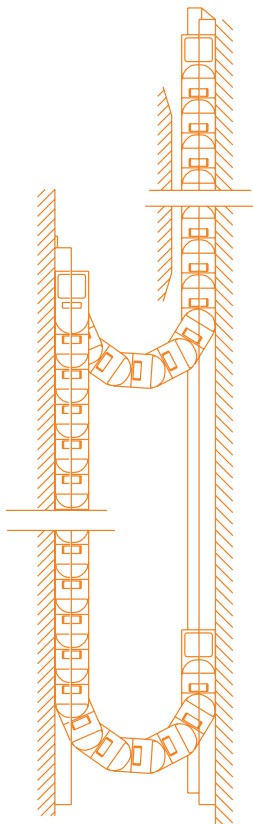
Vertical Hanging

Vertical hanging configurations are most often used with storage and retrieval systems. In this type of application, a cable carrier can be used to house the different types of moving cables/hoses within the system, while simultaneously preventing them from becoming caught or tangled while in operation.

Important Factors

When hanging cables, it is crucial to ensure that each cable bears its own weight to keep the cable carrier from absorbing additional tensile forces. As with vertical standing applications, the two most important factors to consider in a vertical hanging application are how the cables are installed and how they are secured at the cable carrier end points. In any hanging application, making sure the cables are secured and separated properly keeps cables from tangling within the carrier.

Lateral Acceleration

If an application requires vertical motion with lateral acceleration, guiding a cable carrier laterally is required in most instances. Partial guidance is an option, but must cover areas where the carrier might sway. Lateral acceleration can occur in two directions, so lateral guidance must be installed accordingly. Additional guidance along the side of a cable carrier will always increase its stability.

If the application involves vertical motion without lateral acceleration, the carrier can be installed without lateral support.

Camber

A traditional cable carrier with camber is typically suitable, so long as enough space is available. However, many hanging applications must operate in narrow spaces. In these cases, cable carriers that operate without camber (pretension) will deliver better performance. For very tight space constrictions, rigid, no-camber carriers are recommended.
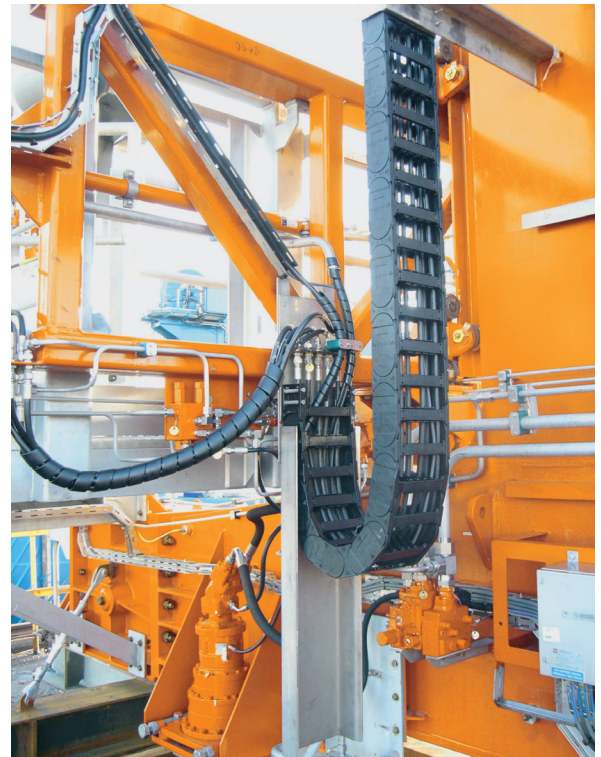

A vertical hanging Energy chain® installation

Learn more at www.igus.com/energychains

Expert Advice

1. Using mounting brackets will increase the performance of a cable carrier system. When working in restricted spaces, it may be beneficial to consult a sales engineer for other possible solutions.

2. Safe strain relief and clear separation of the cables are absolutely critical. Remember: cables must be able to move freely, and bear the entirety of their own weight in a hanging application!
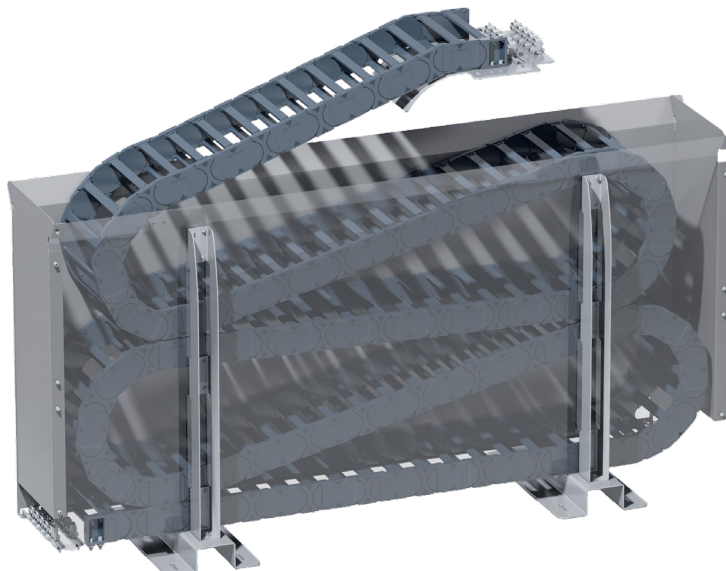
Zig-zag

For applications with strict space constraints, a zig-zag style installation can be used. This type of installation is often used in modern platform technology, such as in adjustable stages where a variety of cables and hoses need to be housed and protected. Using a zig-zag cable carrier allows for over 65 foot stroke lengths with minimal required installation and storage space. While contracted, the cable carrier lays on itself inside a basket type storage system, extending upwards by incorporating a reverse bend radius.
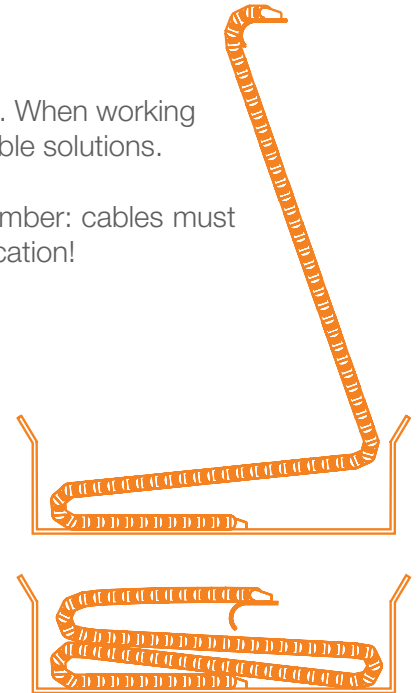
Expert Advice

1. The use of pivoting mounting brackets is recommended with a zig-zag style installation. With these types of brackets, a pivoting connection exists between the mounting bracket and the first chain link in order to relive push forces on the chain link.

2. It is recommended to always consult with a sales engineer when considering a zig-zag style cable carrier installation. Different application factors can greatly affect the maximum speed and acceleration of this type of installation.

To learn more about igus® energy chain® cable carriers, or for expert technical advice, visit www.igus.com/energychains, call us at 401.438.2200, or email sales@igus.com.

A zig-zag cable carrier shown inside its basket-type storage system

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