Attention: Failure to follow installation instructions may result in a serious failure
1. **GUIDE TROUGH - STEEL**

   Installation of the guide trough parallel to machine travel is absolutely imperative. The center of the moving tow arm must be centered over the guide trough. Guide trough must be installed on a level surface.

   a. Layout guide trough installation sets every 6.5 ft (2m)

   b. Bolt down installation kit profile rails (3) on flat level surface. (Snap a chalkline or shoot a laser line). Holes must be drilled in rail (hardware not included)

   c. Preassemble installation kit clamping brackets (2) onto the profile rail with hex bolt (4) and slide nut (5). Ensure the slide nut is properly engaged to profile rail. Do not tighten completely.

   d. Attach guide trough sides (1) to clamping bracket (2) with provided M6x20 flat head screws (6) with M6 lock nut (11). Tighten moderately

   **CORRECT**

   **WRONG**
e. If application is center mount (fixed end of chain is at the center of travel), attach plastic glide bars (7) to sides of guide trough right after the center of travel. Fasten with provided 3/8 or 5/16 bolt (10), 3/8 or 5/16 washer (9) and 3/8 or 5/16 lock nut (8).

f. Glide bars must be installed in such a way that they overlap into the next section of trough. Also, make sure glide bar ends are in horizontal alignment. Misalignment will lead to premature wear, even cable carrier breakage!

g. Place a minimum of 6.5 ft (2m) of Energy Chain® in the guide trough at the beginning of the travel. Adjust the clearance on each side of the chain to .125” or a maximum of .250 overall*. Proceed to tighten hex bolt (4) to slide nut (5). Do this for the entire length of the travel.

*SPECIAL NOTE:
If the Energy Chain has integrated rollers, the maximum clearance is reduced to .200” overall.

h. After trough assembly is complete visually inspect the entire system checking for loose bolts. Pay careful attention to any misaligned section. Misaligned edges will damage the Energy Chain.
2. **Energy Chain**

If the Energy Chain is supplied in meter sections assemble according to enclosed instructions.

a. Assemble the Energy Chain inside the guide trough placing the female end (with holes) at center of travel and male end (with pin) on the moving end.

b. Once the entire chain is assembled in the guide trough, attach the fixed end bracket to the guide trough

c. Refer to application specifications to see if your chain has a lowered mounting height. Be sure to look for the section of chain labeled as “Lowered mounting height”. This section is to be attached to the moving end of the machine. A drawing will be attached to this section showing the correct mounting height. Please refer to the Design section of the igus® Energy Chain catalog: *Gliding, Long Travel Applications*

d. If plastic glide bars are installed, the fixed end of the chain must be mounted as close to the bars as possible, with a maximum of 2” between the glide bars and mounting brackets. If the space is greater than 2” DO NOT Proceed! Call igus at 1-800-521-2747

e. If there are no glide bars in the guide trough the chain must be mounted at the end of travel and run the entire length of the guide trough. In this “end mounted” configuration, the chain will glide upon itself for the entire travel.

g. Do not attach the moving end until the cables have been installed.

*SPECIAL NOTE:

If there are two chains running “opposed” special attention must be paid to the transition section at the center of travel. Use glide bar to bridge the gap.

h. Remove the metal bushing from top of stationary mounting bracket
3. **Install Cables/Hoses in Energy Chain**

a. Move the Energy Chain to the retracted position and open the crossbars on the inner radius. If the crossbars only open on the outer radius move the Energy Chain to the extended position and remove the crossbars.

b. Install cables and hoses according to the drawing provided by igus or the manufacturer of the machine.

c. Cables of different sizes and jacket materials must be separated by vertical separators and shelving components. Consult igus for more information.

d. Once the cables/hoses are installed proceed to snap the cross bars back onto the Energy Chain.

e. Attach the moving end of the chain to the tow arm of the machine. Check if a steel drive plate has been specified for your application. If so, install per the drawing it came with.
4. **Positioning of Cables and Hoses - Installing Strain Relief**

a. In order to ensure the proper operation of the Energy Chain as well as the conduits installed in it all cables and hoses must be positioned so that they do not pull against the inner radius or push against the outer radius of the chain. See diagram below. The conduits must be held in position with strain relief elements. Contact igus for more information.

![Wrong!](image1.png)  ![Correct!](image2.png)

Cables must be able to bend freely

Chainflex® cables can be strain-relieved directly at the mounting bracket

b. Strain relief the cables at the fixed end of the chain using clamps or tiewrap plates provided by igus or other method provided by the machine manufacturer. Strain relief clamps must face forward. See picture below

![Wrong!](image3.png)  ![Correct!](image4.png)

*AIMPORTANT: Strain relief elements must not protrude above the mounting bracket of the chain on the fixed end!*

c. A service loop of excess cable - a minimum of 3 feet or 2% - must be provided immediately after the strain relief elements. This will allow for future adjustments.
d. Move the Energy Chain to the fully retracted position.

e. Check the cables over the entire length to ensure there is no twisting or excess slack in the cables.

f. From the moving end gently pull each cable against the inner radius of the chain then push the cable back so it sits loose in the chain.

g. Fasten the strain relief element and double check the cable position.

h. Proceed to the next conduit and repeat the process

i. Move the chain to the fully extended position.

j. Inspect the cables in the radius of the chain at the center of travel. Cables should not be pulled to the inner radius nor should they be pushed to the outer radius. If so, loosen strain relief and adjust.

IMPORTANT: Hydraulic hoses are strain relieved at the moving end only.

5. **BEFORE CYCLING THE MACHINE**

a. Make certain cables are not pulled tightly against the inner radius at full extension.

b. Make certain the moving end has a lowered mounting height and it is installed according to the igus drawing.

c. Make certain all crossbars, separators and shelves are engaged.

d. Make certain moving end is centered and parallel over the guide trough.

e. Remove upper bushings from KMA mounting bracket at center of travel.

f. Make certain the guide trough is free from obstructions and that all edges are smooth and aligned.

g. Make certain all guide trough and glide bar hardware are tightened.

h. Replace any bent, warped or damaged parts.

i. Make certain guide trough is installed straight.

j. Make certain running clearance between the chain and the guide trough is .250” overall (.125” each side).
k. Make certain there are a minimum of one link buffer in the fully extended position.

L. Make certain the guide trough fully captures the Energy Chain out both fully retracted and extended positions.

Wrong!  Correct!

6. **Cycling the Machine**

a. Cycle the machine at slow speed and observe. Listen for any noises - a properly installed Energy Chain will operate quietly when gliding upon itself. Move the chain through its full range of travel for 4-5 cycles.

b. If the Energy Chain System is functioning properly, cycle the machine at full speed for 10-20 cycles.

c. Move the Energy Chain in both the extended and retracted position. Re-inspect the cables/hoses in the radius to ensure they are in the neutral plane.
**INSTALLATION SET**

A complete installation set consists of:
1. **Guide Trough**
2. **Clamping Brackets**, different for each trough type
3. **Profile Rail**, length to suit the trough width or installation requirements or in standard length "E Stand."
   Part No.: 92-52-XXX (XXX=Insert length in inches).
4. **Hex Head Bolt**
   Part No.: 92-57
5. **Sliding Nuts**, for profile rail
   Part No.: 92-56
6. **Flat Head Screws M6x20**, for securing the brackets to the troughs sections
   Part No.: 92-53
7. **UHMW Glide bars**
8. **3/8 or 5/16 Nut**
9. **3/8 or 5/16 Washer**
10. **3/8 or 5/16 Bolt**
11. **Lock Nuts M6**, for the above screws
    Part No.: 92-55
12. **Steel drive plate** (not shown)

All parts are available from stock.
Guide Troughs/Installation Sets/ Lowered Moving End

Guide Troughs

Before Travel Center

Glide bars

Beyond Travel Center

Principle of lowered mounting height

Lowered connecting point

Depending on the technical date and the Energy Chain selected, the connecting point of the moving end of the Energy Chain frequently has to be lowered.

Please contact igus® for additional recommendations.

Complete Energy Chain System with guide trough and Chainflex® cable.

Smooth, jointless transition of the guiding trough sections. The C-profile is screwed to the floor.

The Energy Chain (upper run) slides on the glide bar or on the lower run. (See guide troughs above left)