



Draka

Compensation Cable Installation Guide

FOR WHISPER-FLEX® AND WIDE-LOOP STEADI-FLEX® CABLES

VERSION 1114



A brand of the

Prysmian
Group

Important! Please read!

WARRANTY AND SAFETY INFORMATION

This guide has been prepared to instruct installers in the safe and efficient installation of Whisper-Flex and Steadi-Flex compensating cables. Failure to follow these procedures will not only invalidate product warranty, but could endanger public safety. If you have any questions regarding installation procedures, please do not hesitate to call Draka Elevator Products at 877.372.5237 or 252.972.6000.

WHISPER-FLEX® compensating cables are designed to be used in free-hanging applications in traction elevators.

STEADI-FLEX® compensating cables are designed to be used in free-hanging applications in traction elevators when a wider loop is desired.

With proper dampening devices, they may be operated at speeds of up to 700 ft/min • 3.56 m/sec (speeds up to 350 ft/min • 1.8 m/sec without them). Recommended operating temperatures from 5°F to 140°F • -15°C to +60°C.

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Whisper-Flex® and Steadi-Flex® - the differences

TAILORED FOR YOUR PARTICULAR APPLICATION

Whisper-Flex cable provides smooth operation at temperatures of -15°C to $+60^{\circ}\text{C}$ and, in the US, can be used for elevators with rated speeds of no greater than $3.56\text{ m/sec} \bullet 700\text{ ft/min}$. Support brackets, U-bolts, S-hooks, and heavy duty stainless steel grips specifically designed for Whisper-Flex cable must be used to ensure safe installations.

Draka Elevator damping devices are recommended to minimize cable sway for car speeds above $1.8\text{ m/sec} \bullet 350\text{ ft/min}$.

Steady-Flex is NOT a one-for-one replacement for Whisper-Flex.

Pit dimension and possible obstructions should be considered when specifying Steady-Flex.

Counterweight and car attachment points should be spaced to match the dynamic loop width.

Steady-Flex cable is a wide-loop version of our standard Whisper-Flex compensating cable.

Because of its wider natural loop, Steady-Flex cable can be positioned closer to the car's centerline. This improves car balance and ride quality for installations with side counterweights and long hang lengths (over $122\text{ m} \bullet 400\text{ ft}$).

When choosing Steady-Flex, give special consideration to the dynamic loop width. The dynamic loop width is the width of the loop when the cable is in motion and will vary with car speed, distance between support points and other factors.

Hardware required for installation

USE DRAKA ELEVATOR INSTALLATION KITS

Draka installation kits contain all hardware needed for the safe installation of Whisper-Flex and Steadi-Flex compensating cable.

JCC kits are for Whisper-Flex installations. They include a stainless steel double eye/double weave/closed mesh grip and one roll of electrical tape.

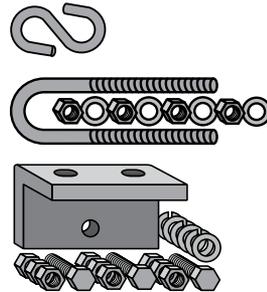
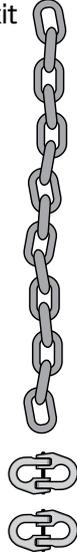
JCC-CHN kits are for Steadi-Flex or Whisper-Flex in shallow pits. They include a 1.2 m • 4 ft chain and one or two couplings.

BOTH kits contain
one steel S-hook,
one steel U-bolt with nuts
and washers, and
two support brackets with nuts, bolts,
flat washers and lock washers.

JCC kit



JCC-CHN kit



Using hardware other than Draka's could seriously jeopardize the safety of your installation and void any warranty.

Visual inspection and moving the reel

LOOK FOR OBVIOUS DAMAGE / MOVE CABLE SAFELY

Immediately inspect the cable for physical damage. A cut or gash could mean a weakened and unsafe cable.

Examine the reel as well. A damaged reel may be a sign of rough handling in transit and may also indicate cable damage.

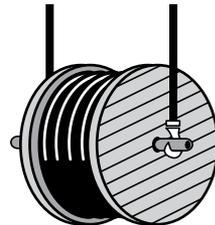
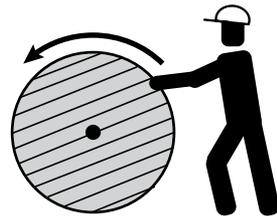


Whisper-Flex and Steadi-Flex cable may be moved by forklift.

Lift the reel by the wood, not by the cable.



It may also be rolled on its reel on a firm surface. If a hoist is being used, place a strong rod through the reel for lifting purposes. Store the cable in a safe place.

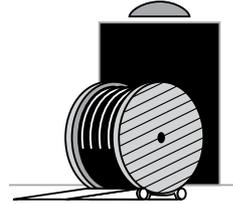


Do not install potentially damaged cable. Call Draka if you have any questions regarding damaged cable.

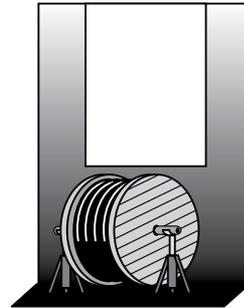
Position the cable for unreeling

WORK FROM THE PIT OR THE LOWEST LANDING

Place the cable reel in a convenient location near the elevator (usually the first landing or the pit floor). Reel rollers are the preferred means of supporting the reel.

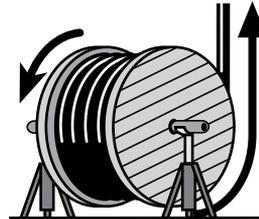


Another method is to run a strong rod or pipe through the hole in the center of the reel. Support the pipe ends so that the reel is off the floor enough to rotate freely.



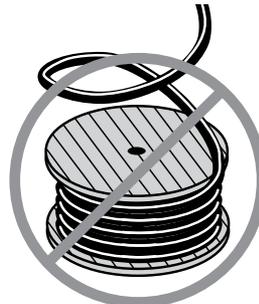
Pay the cable off the bottom of the reel.

YES



NEVER pay cable off the side of a reel as it causes the cable to twist.

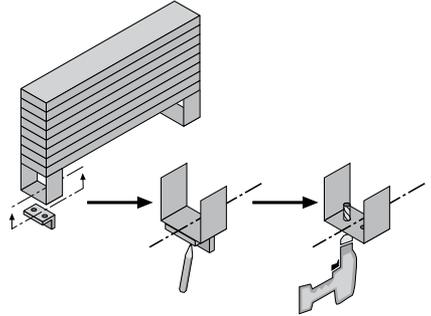
NO



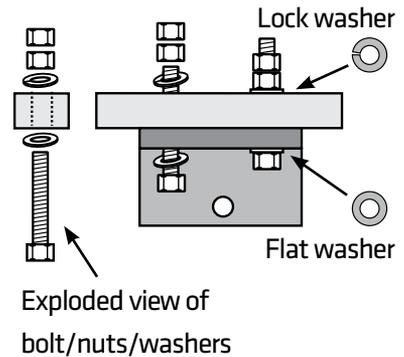
Install the counterweight support bracket

DRILL THE COUNTERWEIGHT FRAME

Bring the counterweight down to a comfortable working level. Use the counterweight support bracket as a template to mark and drill correctly-sized holes centered on the counterweight frame.



Attach the counterweight support bracket to the frame by placing the flat washer over the 13 mm • 1/2 in bolt and running the bolt up through the bracket and the frame. Then place the lock washer on the bolt. Secure the bolt with two nuts. Repeat with the other bolt.



Prepare the cable end for termination

LEAVE ONE-AND-ONE-HALF EXPOSED LINKS

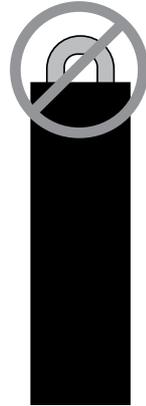
Expose one-and-one-half links of undamaged chain.

Both Whisper-Flex and Steadi-Flex may be ordered with the ends prepared as shown. Call Draka Elevator for details.

YES



NO



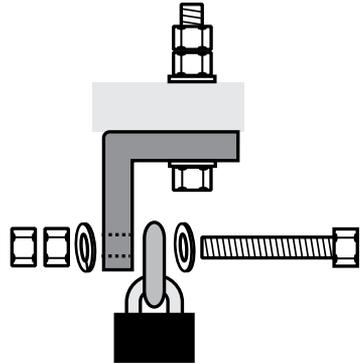
You may also use the Whisper-Flex Strip Kit (part number WF-STRP) to prepare the cable end. See pages 27 - 32 for cable preparation instructions.



Attach the cable to the counterweight bracket

USE THE ATTACHMENT BOLT SUPPLIED BY DRAKA ELEVATOR

Place the flat washer over the chain attachment bolt. Run the bolt through the chain link and the bracket. Place the lock washer on the bolt. Secure the bolt with two nuts.



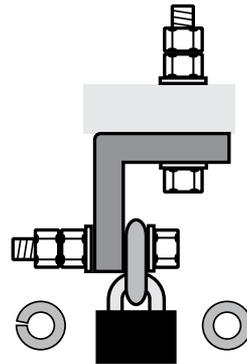
Chain attachment bolt sizes

WF075 & 10 10 mm • 3/8 in.

WF/SFC15 to 30 12 mm • 7/16 in.

WF/SFC35 & 40 13 mm • 1/2 in.

Once the cable is attached, run the counterweight up and bring the car down to a comfortable working level at the bottom of the hoistway.



Lock washer Flat washer

Using hardware other than Draka's could seriously jeopardize the safety of your installation and void any warranty.

Whisper-Flex® cable loop diameters

DETERMINING LOOP DIAMETER

For optimum performance, there is a specific distance between the cable counterweight and car attachment points - the cable loop diameter of a hanging cable. As shown on the table below, the loop diameter varies with the size/weight of the cable.

Product Code	Cable Weight lb/ft • kg/m	Loop Diameter in • cm	Max. Hanging Length* ft • m
WF075	0.75 • 1.12	22 • 54	600 • 183
WF10	1.0 • 1.49	24 • 61	600 • 183
WF15	1.5 • 2.23	24 • 61	600 • 183
WF20	2.0 • 2.98	26 • 66	520 • 159
WF25	2.5 • 3.72	26 • 66	600 • 183
WF30	3.0 • 4.46	26 • 66	505 • 154
WF35	3.5 • 5.21	27 • 69	600 • 183
WF40	4.0 • 5.95	27 • 69	530 • 162

*Max. hanging lengths are based on a 5:1 safety factor per ASME A17.1-2013

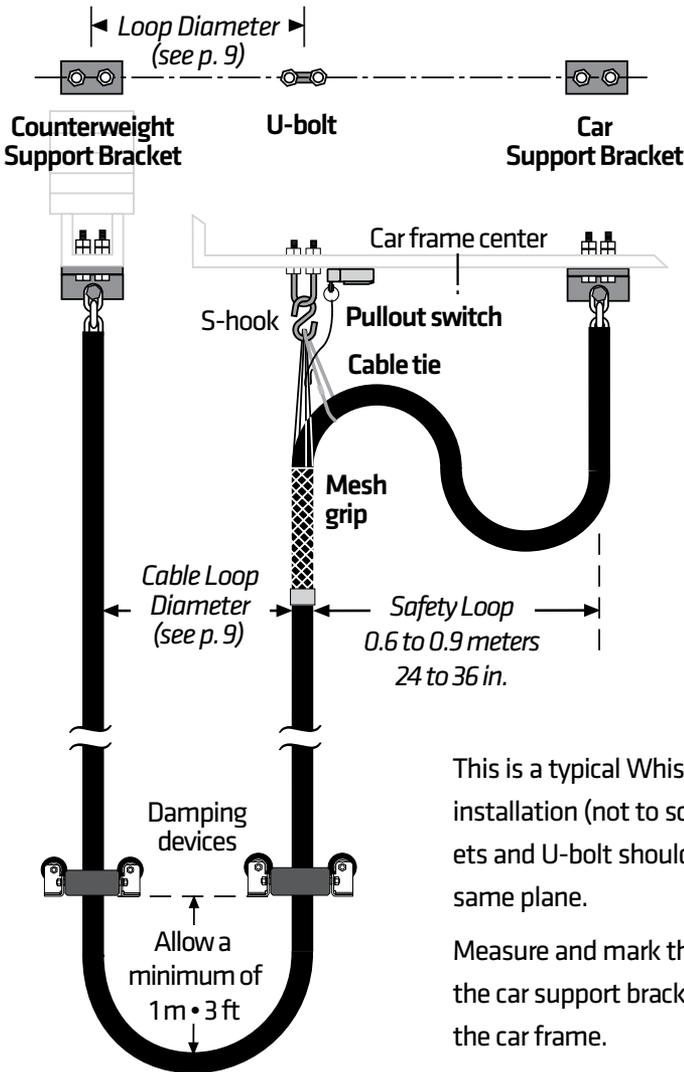
Measured from the hanging point of the counterweight, the cable loop diameter provides the location of the U-bolt.

The car support bracket is located 60 to 90 cm • 24 to 36 in. beyond the U-bolt. Please note the JCC-CHN distances can be reduced.

Do NOT exceed the maximum hanging lengths shown on the table above. Contact Draka for longer hanging lengths.

Typical Whisper-Flex installation diagram

MEASURING THE HANGING POINTS



This is a typical Whisper-Flex cable installation (not to scale). The brackets and U-bolt should all be in the same plane.

Measure and mark the locations of the car support bracket and U-bolt on the car frame.

Two damping devices are recommended for speeds above 1.8 m/sec • 350 ft/min. See pages 22 - 25 for details on these devices.

Stedi-Flex® cable loop diameters

DETERMINING DYNAMIC LOOP WIDTH

For optimum performance, there is a specific distance between the cable counterweight and car attachment points - the dynamic loop width. As shown on the table below, the dynamic loop width varies with the size/weight of the cable.

Product Code	Cable Weight kg/m • lb/ft	Dynamic Loop Width cm • in	Max. Hanging Length* m • ft
SFC15	2.23 • 1.5	117 • 46	183 • 600
SFC20	2.98 • 2.0	120 • 47	159 • 520
SFC25	3.72 • 2.5	122 • 48	183 • 600
SFC30	4.46 • 3.0	125 • 49	154 • 505
SFC35	5.21 • 3.5	127 • 50	183 • 600
SFC40	5.95 • 4.0	127 • 50	162 • 530

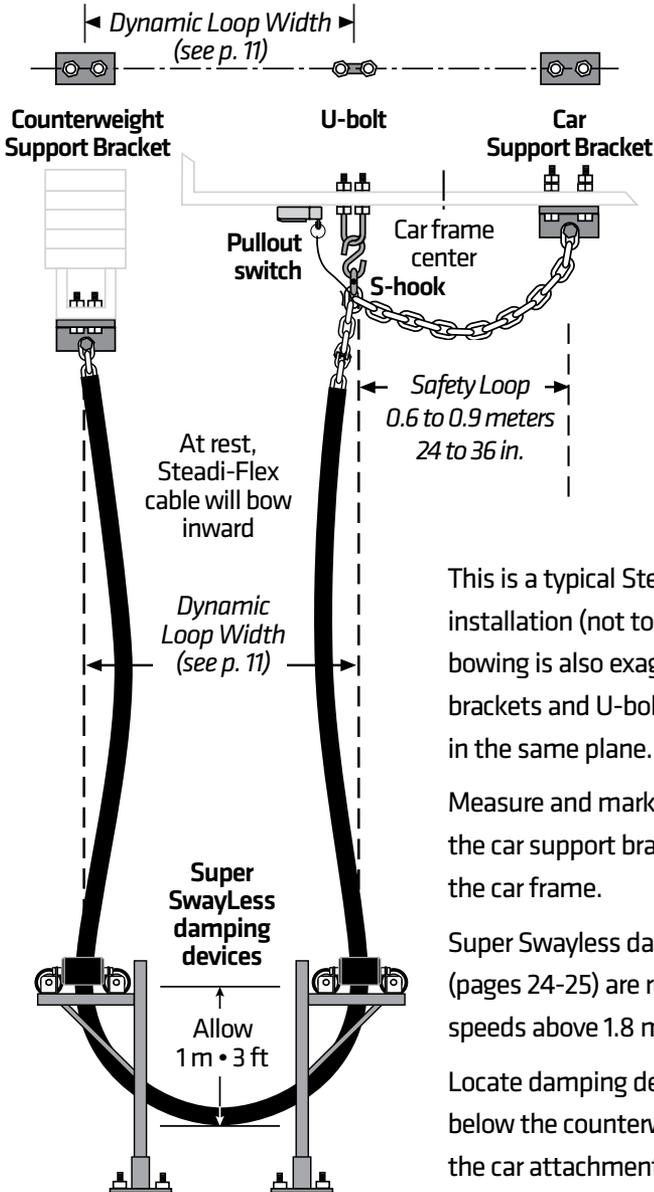
*Max. hanging lengths are based on a 5:1 safety factor per ASME A17.1-2013

Note: at rest, Stedi-Flex cable will bow inward slightly. If you are using Super SwayLess devices (pages 24 - 25) to control movement, the cable will touch the rollers at rest but will assume the dynamic loop width in motion.

Using hardware other than Draka's could seriously jeopardize the safety of your installation and void any warranty.

Typical Steadi-Flex installation diagram

MEASURING THE HANGING POINTS



This is a typical Steadi-Flex cable installation (not to scale - cable bowing is also exaggerated). The brackets and U-bolt should all be in the same plane.

Measure and mark the locations of the car support bracket and U-bolt on the car frame.

Super Swayless damping devices (pages 24-25) are recommended for speeds above 1.8 m/sec • 350 ft/min.

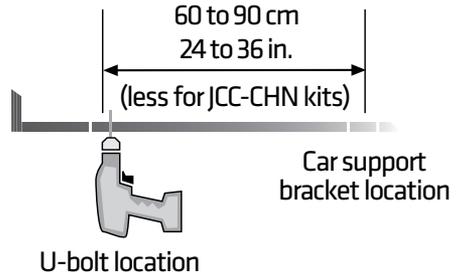
Locate damping devices directly below the counterweight support and the car attachment points.

Attach the car support bracket

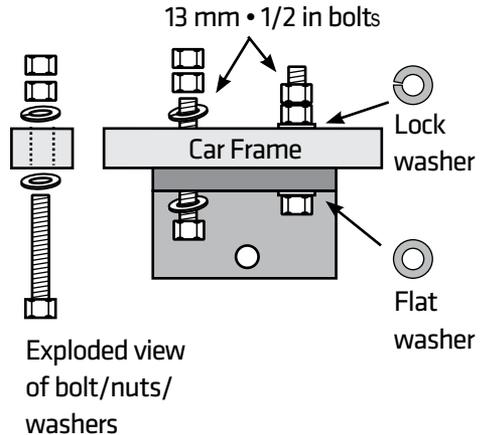
DETERMINE HOLE LOCATIONS AND DRILL THEM

Drill properly spaced mounting holes for the car support bracket and the U-bolt on either side of your marks.

If using a JCC kit, the location for the car support bracket and the U-bolt should be 60 to 90 cm • 24 to 36 in apart. This distance will be shorter if using a JCC-CHN kit.



Attach the car support bracket to the bottom of the car frame as shown.

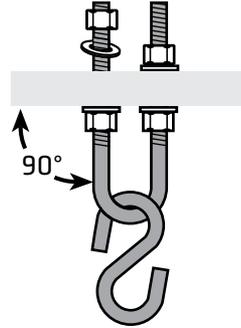


Secure U-bolt and place the S-hook

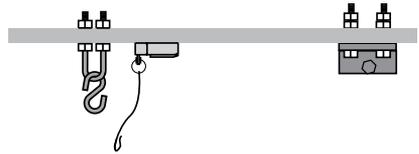
U-BOLT SHOULD BE VERTICAL

Install the U-bolt through the holes in the car frame. Make sure that the U-bolt is tightly held at a 90° angle to the car frame.

Place the S-hook through the U-bolt.



The Pullout Switch should be installed near the U-bolt. If the S-hook is activated, the cable will pull the key downward and trigger the switch.



NOTE: The pullout switch kit (WF-POSK) is sold separately.

Using hardware other than Draka's could seriously jeopardize the safety of your installation and void any warranty.

Determine which installation kit to use

USING THE JCC OR JCC-CHN INSTALLATION KITS

Whisper-Flex requires the use of JCC installation kits (or JCC-CHN kits for shallow pits - see below). Cable termination location is determined by which style of installation kit is being used.

JCC kits need enough cable to form an S-shaped safety/adjustment loop which then connects to the car support bracket.

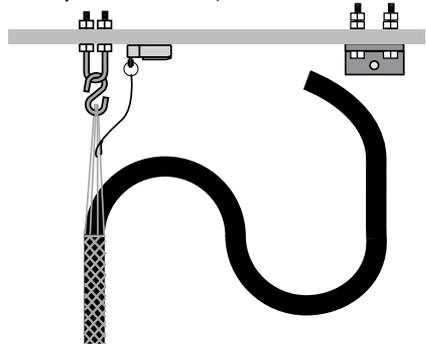
Once the cable has been installed and the loop has been formed (see pages 16 and 17), cut the cable at the point where it reaches the support bracket.

Steady-Flex and shallow pits require the use of JCC-CHN installation kits.

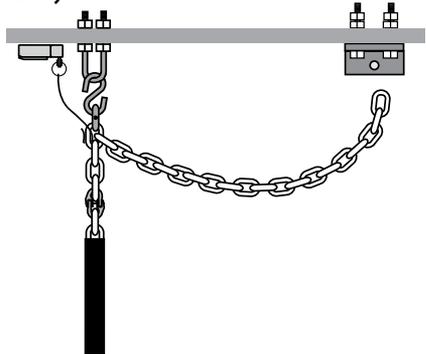
These kits use chain and couplings to form the safety loop. Once the cable has been installed and the loop has been formed (see page 18), cut the cable four links short of the S-hook.

If the cable was not ordered with prepared ends, see pages 27 - 32 for instructions on using the Whisper-Flex Strip Kit.

Whisper-Flex uses JCC kits



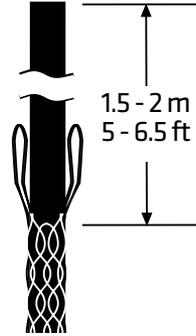
Steady-Flex and shallow pits use JCC-CHN kit



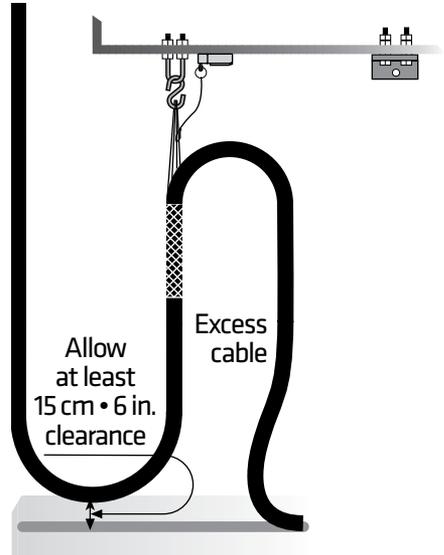
Attach Whisper-Flex to the car

USING JCC KITS WITH A MESH GRIP

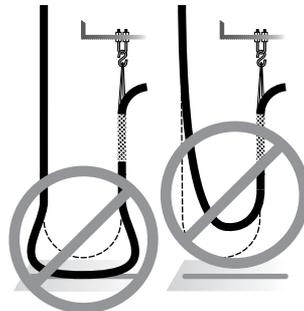
For JCC installations, place the mesh grip over the end of the Whisper-Flex cable that will be attached to the car. Position the grip so that the top of the weave is between 1.5 to 2 meters • 5 to 6.5 ft from the free end of the cable.



Hang the grip from the S-hook. Adjust the cable within the grip as needed so that the cable hangs freely at least 15 cm • 6 in above the pit floor and forms a 'relaxed' and semi-circular loop.



The cable should not bell out or hang in a misshapen loop.

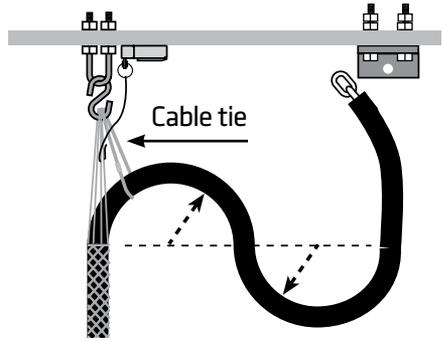


Form the safety/adjustment loop - JCC kits

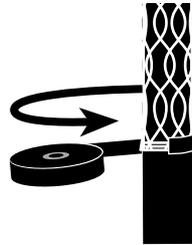
ADJUST AND SECURE WITH ELECTRICAL TAPE

For JCC installations, hang the mesh grip from the S-hook. Compress the mesh grip and adjust the cable so that it forms a reverse curve (two half-circles of equal size). Attach a cable tie to help the cable exit the grip vertically. Make sure the grip is hanging vertically.

The connecting cable tie for the pullout switch should pass through the key's ring and the mesh grip eye loops.



Once positioned, secure the bottom of the mesh grip to the cable with at least 4 wraps of electrical tape. Make sure that the safety loop does not get caught on any pit equipment (ex: car buffer).



Failure to make the safety adjustment loop could seriously jeopardize the safety of your installation.

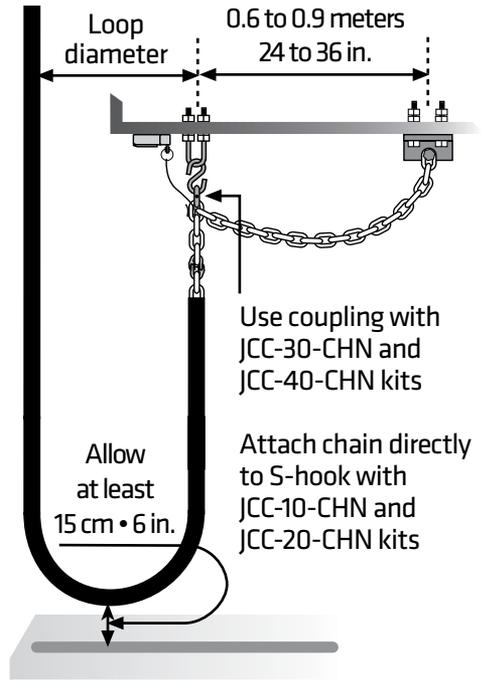
Form the safety/adjustment loop - JCC-CHN kits

ATTACH THE CABLE WITH THE SUPPLIED COUPLINGS

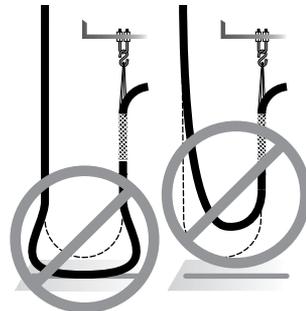
For JCC-CHN kits for Steadi-Flex and shallow pit applications, attach the chain provided in the kit to the cable with the coupling (instructions are in the coupling package).

Use the S-hook to connect the chain to the U-bolt. If the chain link is too small to permit this, use the second (smaller) supplied coupling to make the connection to the S-hook.

The connecting cable tie for the pullout switch should pass through the key's ring and a chain link.



The cable should not bell out or hang in a misshapen loop.



Failure to make the safety adjustment loop could seriously jeopardize the safety of your installation.

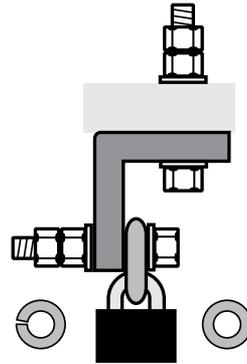
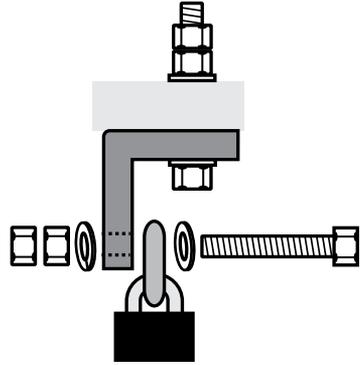
Attach the cable to car support bracket

TERMINATE THE CHAIN AT THE SUPPORT BRACKET

Attach the exposed link from either the cable (JCC kit) or the chain (JCC-CHN kit) to the bracket as shown. Place the flat washer over the chain attachment bolt. Run the bolt through the chain link and the bracket. Place the lock washer on the bolt. Secure the bolt with two nuts.

Chain attachment bolt sizes

WF075 & 10	10 mm • 3/8 in
WF/SFC15 to 30	12 mm • 7/16 in
WF/SFC35 & 40	13 mm • 1/2 in



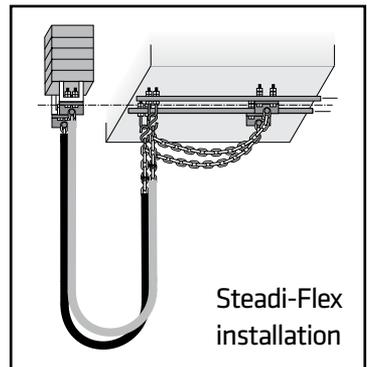
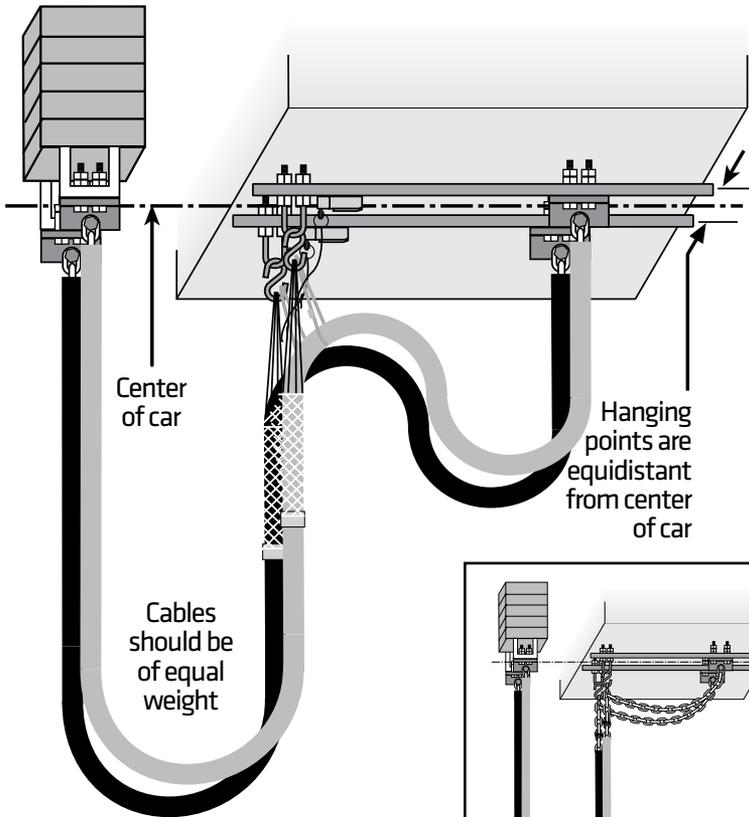
Lock washer Flat washer

Multiple compensating cables installation

FOR BALANCED LOADS

To optimize car balance, most installations call for two equally-sized Whisper-Flex or Steadi-Flex cables. If so, position the brackets and the U-bolt equidistant from the center of the car, the same distance apart as on the counterweight.

The cables should hang parallel to each other and perpendicular to the wall with the counterweight.



High speed installations

INSTALLING THE DAMPING DEVICES

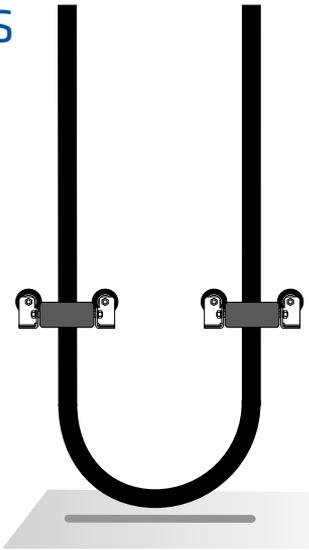
Two damping devices are recommended for high-speed applications (1.78 to 3.56 m/sec • 350 to 700 ft/min).

Position the devices a 'loop diameter' apart (see page 9 for Whisper-Flex or 11 for Steadi-Flex) and directly below the counterweight support bracket and the Safety U-bolt/S-hook.

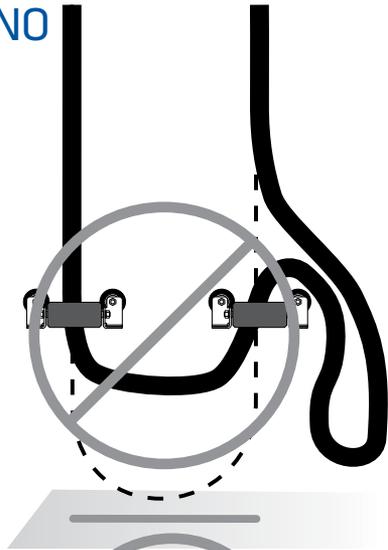
All cable and support devices should be on the same plane within the hoistway.

The devices should not guide the cable out of its natural plane.

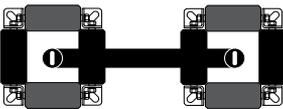
YES



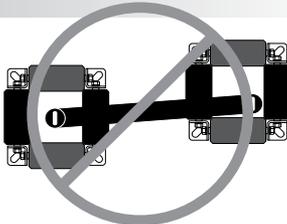
NO



YES



NO

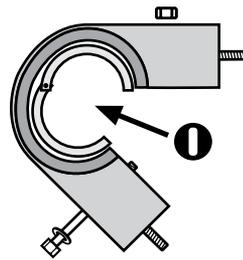
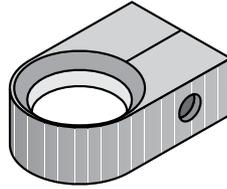


Using SwayLess® damping devices

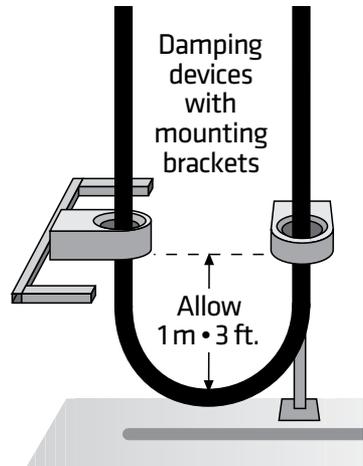
FOR WHISPER-FLEX SIZES UP TO WF30 < 2.5 M/SEC • 500 FT/MIN

Two SwayLess damping devices are normally required for installation and are mounted 1 meter • 3 ft from the base of the loop.

SwayLess dampeners open when unbolted. Close the SwayLess device around the cable and bolt it back together. The internal brass ring can be easily replaced as it wears over time.



Rail-mounted (SL-RMB-2) and floor-mounting (SL-FMB-48) brackets are available.



When properly installed, damping devices will keep the cable inside its vertical traveling plane.

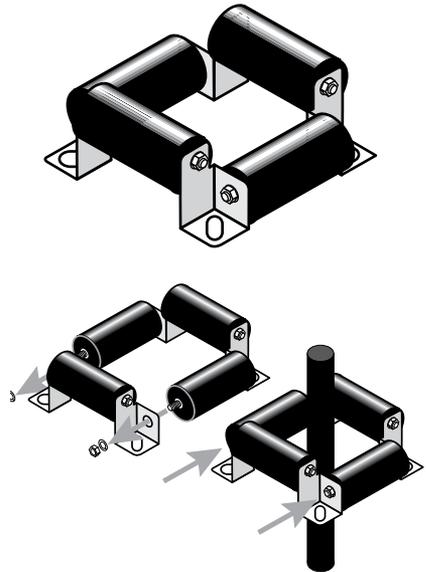
It is critical that the cable travel vertically as it passes through the dampeners.

Using Super SwayLess® damping devices

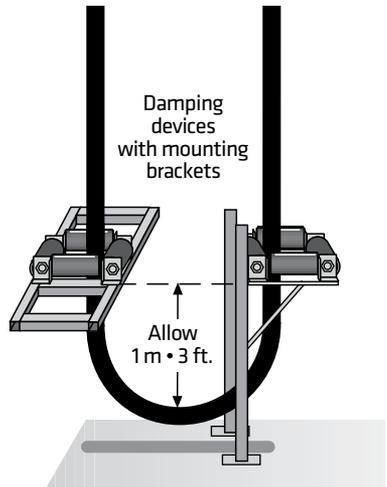
FOR INSTALLATIONS 2.5 TO 3.56 M/SEC • 500 TO 700 FT/MIN

Two Super SwayLess damping devices are normally required for installation and are mounted 1 meter • 3 ft from the base of the loop.

Use a wrench to detach one roller with two brackets and place the dampener around the cable. Reattach the roller and brackets after inserting the cable.



Rail-mounted (SSL-RMB-2) and floor-mounted (SSL-FMB-48) brackets are available.



When properly installed, damping devices will keep the cable inside its vertical traveling plane.

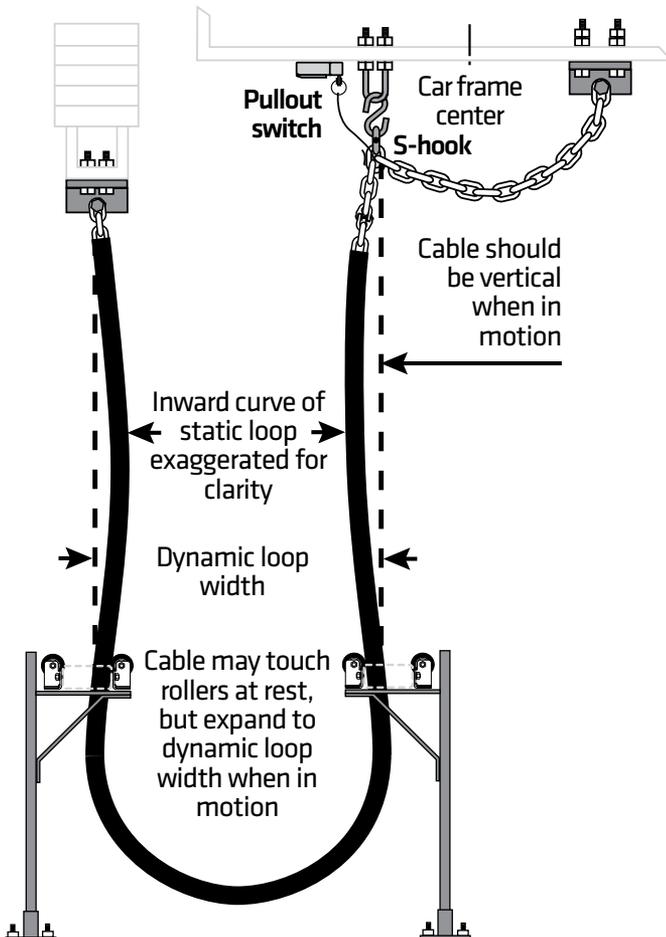
It is critical that the cable travel vertically as it passes through the dampeners.

Using Super SwayLess devices with Steadi-Flex

THE CABLE WILL TOUCH THE DEVICES AT REST

It is important to note that Steadi-Flex cable will actually touch the rollers of a Super SwayLess device when at rest. This is due to the natural tendency of Steadi-Flex cable to bow inward when not in motion.

When the car moves, the cable will assume its dynamic loop width and touch the Super SwayLess device as part of its normal sway damping function.



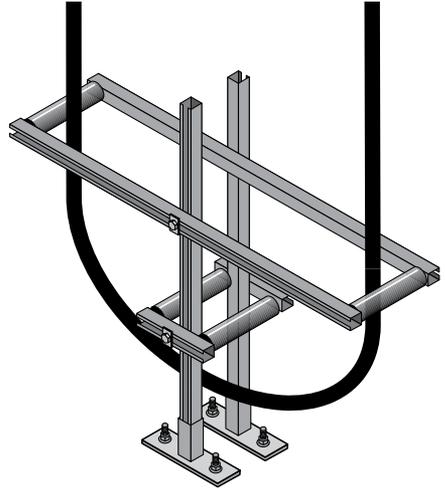
Using ShallowSwayless damping devices

RECOMMENDED ONLY FOR SHALLOW PIT INSTALLATIONS

The ShallowSwayless is **ONLY** for shallow pit applications.

The ShallowSwayless is a sway reduction device for shallow pit applications where there is insufficient pit depth for SwayLess or SuperSwayless devices. It reduces compensating cable sway and oscillation in installations up to 3.56 m/sec • 700 ft/min. Two sizes are available; the 27L version is for Whisper-Flex and the 50L version is for Steadi-Flex.

The kit includes all components shown, including mounting bolts and washers.



Final inspection

CHECK ALL POINTS PRIOR TO OPERATION

Give your installation a final inspection. Make sure that:

- the cable has no cuts, gashes, deep abrasions or damaged links
- all Support Brackets are tightly fastened
- both end links of the cable are securely attached to the support brackets
- all U-bolts are vertical and tightly fastened
- the cable hangs vertically and does not touch walls, floor or hoistway/pit equipment
- if damping devices are used, make sure that they are installed at the recommended height above the bottom of the cable loop
- the damping devices, if used, do not guide the cable out of its natural loop or interfere with buffer operations.
- the pullout switch key is securely attached to the mesh grip eye loop (JCC kit) or a chain link (JCC-CHN kit) and that it will freely and vertically pull out should the S-hook activate.

A routine inspection program should be implemented to maximize product safety and performance.

Cable stripping instructions

USING THE WHISPER-FLEX FIELD STRIP KIT

The Whisper-Flex Strip Kit (WF-STRP - ordered separately) contains all of the tools and accessories required to prepare both Whisper-Flex and Steadi-Flex cable ends for installation.

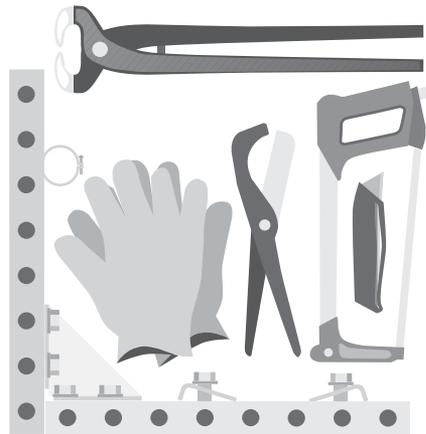
The kit contains

- an angle bracket,
- clamps to fit all sizes of cable,
- nippers,
- a utility knife,
- cable jacket cutter, a hacksaw,
- protective gloves and
- a carrying case.

Replacement tools can be ordered individually.

Prestripped cable is available.

Call Draka Elevator for details.



Attach the angle bracket to the car guide rail

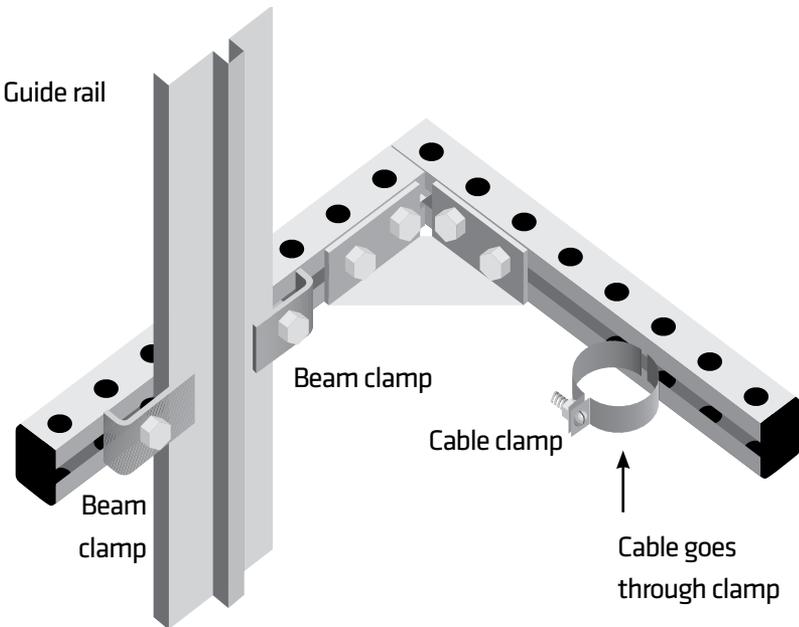
SELECT THE PROPER-SIZED CLAMP

Attach the angle bracket to the car guide rail by tightening the beam clamps using a 3/4 inch wrench.

Position the angle bracket as shown at a comfortable working height.

Insert the proper-sized cable clamp into the channel.

Use a screwdriver to loosen the cable clamp.



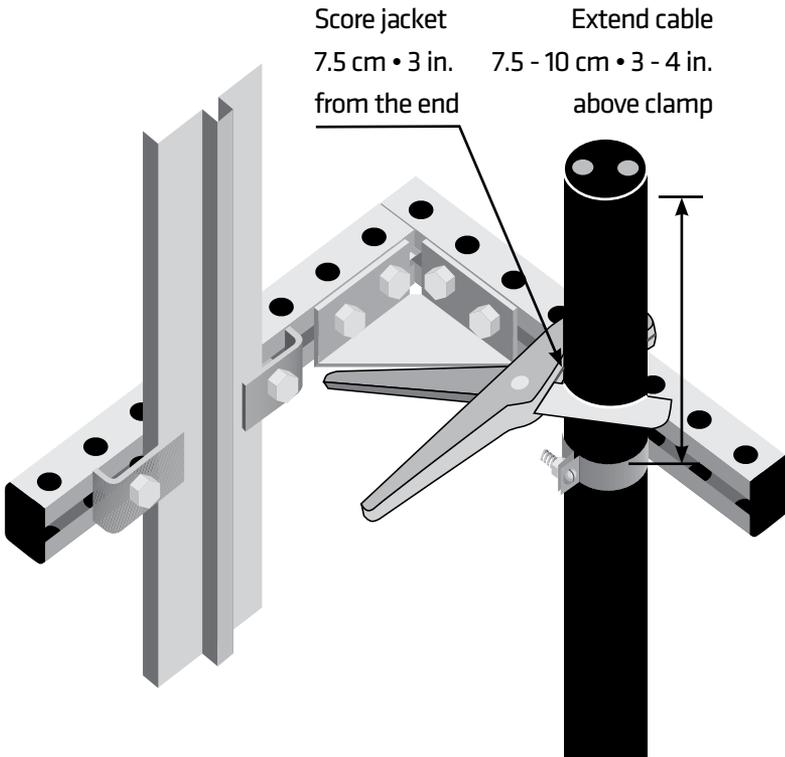
Score the jacket with the cable jacket cutter

ESTABLISH A GUIDE CUT

Run the cable through the clamp so that 7.5 to 10 cm • 3 to 4 in of cable is exposed above the clamp. Tighten the clamp with a screwdriver.

Position the cable jacket cutter about 7.5 cm • 3 in from the cable end.

Rotate the jacket cutter to score and make a ring cut through the cable.



Cut and slit the cable jacket

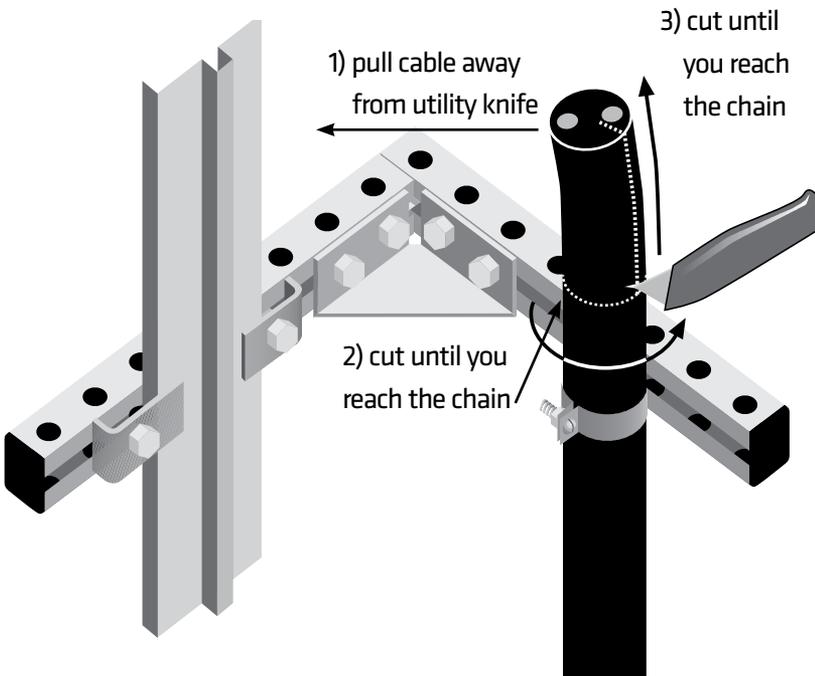
CUT ALL THE WAY TO THE CHAIN

Once the cable is scored,

1) grab the end of the cable and bend it as you...

2) deepen the ring cut all the way to the chain with the utility knife. This may require several passes with the knife.

3) Use the utility knife to make a vertical cut from the ring cut to the cable end. Make sure the jacket is cut deeply enough to reach the chain.

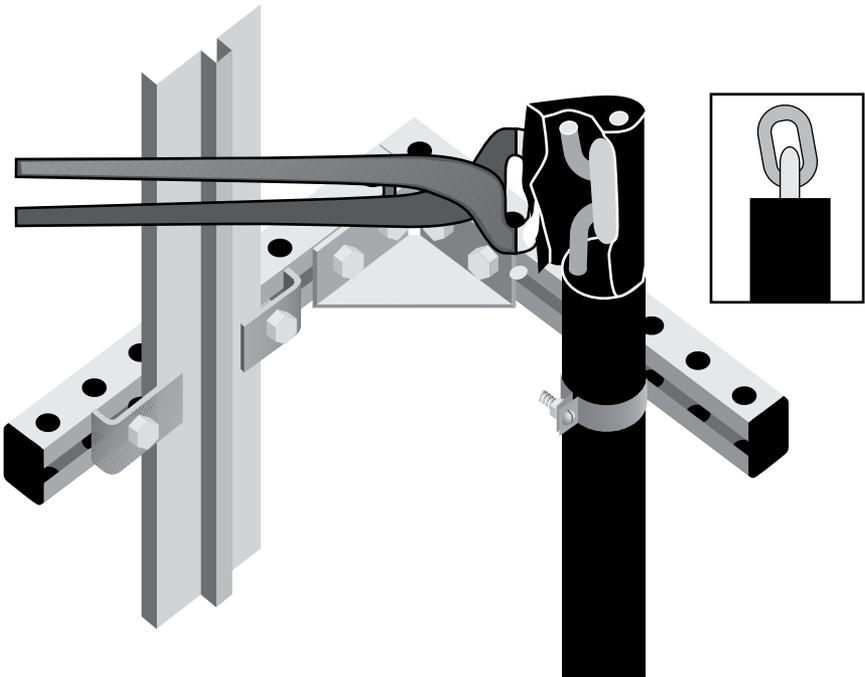


Use the nippers to remove the jacket

EXPOSE ONE-AND-ONE-HALF LINKS OF UNDAMAGED CHAIN

Once the ring and vertical cuts are made, use the nippers to grab an edge of the vertical cut and rip the jacket from the chain. If necessary, repeat this step for the other edge of the cut.

Repeat the stripping process as needed until one-and-one-half undamaged chain links are exposed. Discard any cut links.



Cut the cable to the correct length

USE THE ANGLE BRACKET AS A SUPPORT

Unbolt the arm of the angle bracket that was used to prepare the counterweight end of the cable. Reattach it so that the side with the channel/clamp is facing up.

Tighten the clamp to hold the cable. Use the hacksaw provided in the strip kit to cut off the excess cable.

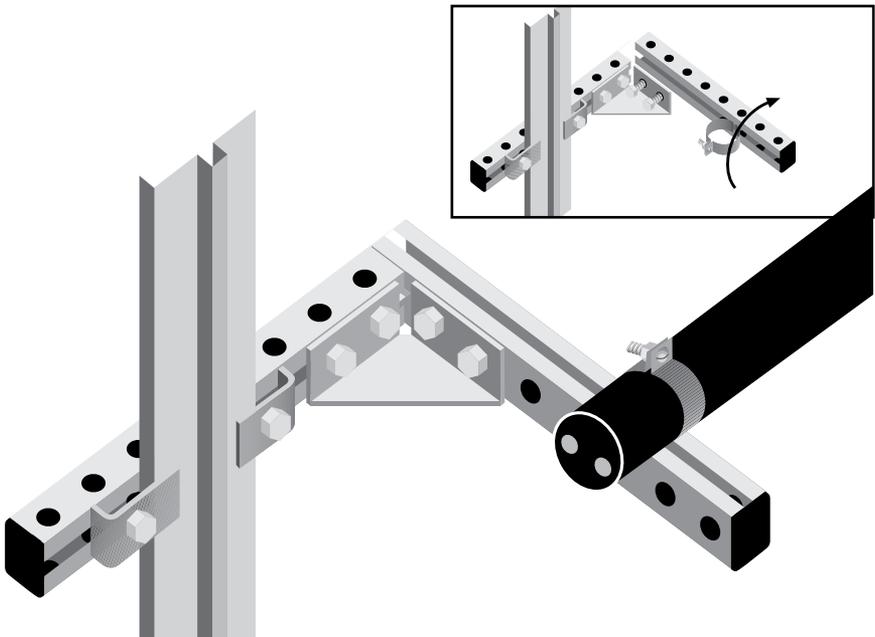
Clamping the cable to the angle bracket helps prevent injury caused by blade slippage.

Return the angle bracket arm to its original position.

Prepare the cable end as before (pages 7 to 12).

If you are using a JCC kit with mesh grip, go to page 17 for safety loop instructions.

If you are using a JCC-CHN kit with chain, go to page 18 for safety loop instructions.



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Draka Elevator
2151 N. Church Street | Rocky Mount, NC 27804
1-877-DRAKA EP (877-372-5237) | +1-252-984-5100 | Fax +1-252-972-6001
Technical information 1-877-408-4357 | www.drakaelevator.com