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# Manual

*for the*

## LiftNStore

### Overhead Storage Lift

*Installation, operation and maintenance*

English



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SOUTHWEST**SOLUTIONS**GROUP

*business organization systems*

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image 100

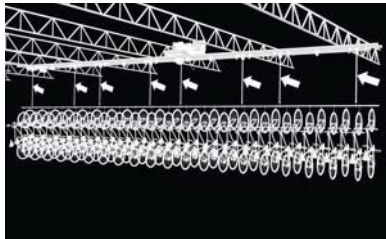


## What is a 'LiftNStore'?

This is the overhead storage lift used for storage in the back rooms of retail stores. These are used for bicycles or clothing and there are some used for light boats and car tires.

When you push a button the hang bar comes down to eye level where it is easy to load or unload. Push the button and the goods go up to the ceiling.

image 101



**The hang bar is suspended** from nylon straps that wind onto spools up on the lift. The lift itself is mounted in the ceiling.

*Note:* This manual is specifically for LitNStore units being installed in Target Stores. There are different rules for other installations. Most Target Stores will order a 32 foot LiftNStore, but sometimes they will want a 24 foot LiftNStore.

image 102



**A typical LiftNStore** is made from 8 foot long sections that are bolted together end to end. The sections all are built on identical frames. The Drive Section is the heaviest and most complex because of the motor, control box, and drive sprockets. You will need to mount and level the Drive Section first because all the other sections are bolted to it. If the Drive Section is off, the whole installation will be off.

image 103



**Next a Filler Section** gets bolted onto each end of the Drive Section.

image 104



**Next the End Section**, which has the Safety Brake, is mounted far away from the Drive Section.

image 105



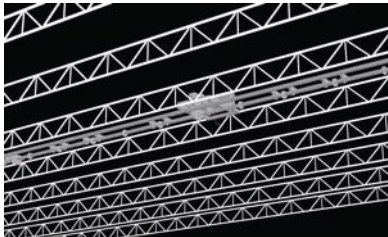
**Every section hangs** from four threaded rods except for the Drive Section, which hangs from six threaded rods because it is heavy.

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### Tools you will need to install a LiftNStore

Safety glasses  
Safety harness and lanyard  
Hard hat  
Steel toe work boots  
Work gloves  
Reflective safety vest  
Utility knife  
Needle nose pliers  
Screw driver, 1/8 standard and #1 Phillips  
Side cutter  
Multimeter  
25 foot tape measure  
Level, 2 feet long minimum, magnetic is best  
Hammer, finishing  
Drift punch, 7/16  
Open end wrench set, standard, sizes 1/4, 5/16, 3/8, 7/16, 1/2, 9/16, 5/8, 3/4, 11/16, 13/16, 3/4, 7/8 in. (2 sets)  
Power drill with a 3/8 nut driver and a 5/16 nut driver  
Hex wrench set, metric and standard  
Sawsall, with blades to cut metal and wood

image 109

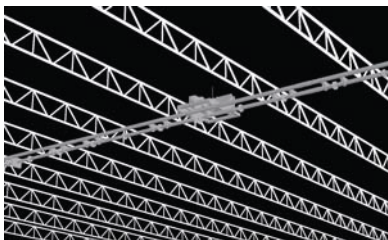


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#### There are two kinds of installation

An '**parallel**' installation has the LiftNStore running the same way as the ceiling joists.

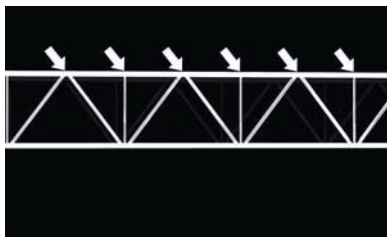
image 110



A '**perpendicular**' installation has the LiftNStore running across the ceiling joists.

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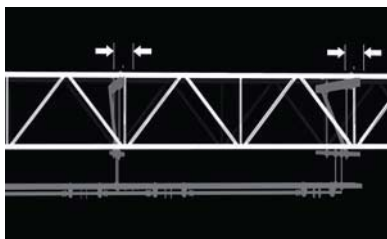
image 112



### What is a Panel Point?

A panel point is the strongest place on a ceiling joist and this is where we attach. A ceiling joist has a top cord, a bottom cord and the struts. Some of the struts are at 45 degree angles and some struts are straight up and down.

image 113

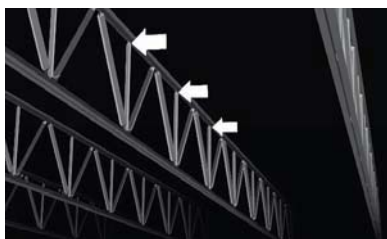


### Where these struts attach to the cord is called a panel point.

It is important to attach the Unistrut within six inches of a panel point. If you do not do that, the client can reject the installation.

Note: For Target Stores we need to have Unistrut attached every four feet.

image 114



**The easiest panel points to mount to** are ones with the up and down struts. The angled struts are hard to get close enough to.

Note: In Target Stores we must mount to the TOP cords of the ceiling joists. If we mount to the bottom cords Target can reject the installation.

image 115



### What is a 'trapeze'?

When you look up at a LiftNStore you will see that it is hanging down from threaded rods. The threaded rods pass through Unistrut that is part of the trapeze construction we installed.

image 116



### How to make your layout.

Begin by studying the blueprint. You will see the outline of the LiftNStore on the blueprint. Use your tape measure to make sure the numbers on the drawing are correct.

Look up and study the joists. Notice anything that will get in your way like ductwork, sprinkler heads, heaters, plumbing, wiring, skylights, door tracks, lights, cameras, etc.

image 117

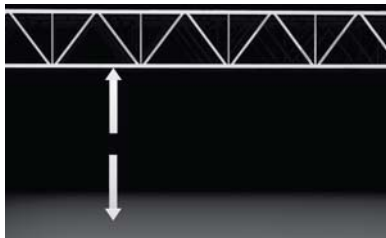


**Find the power outlet** and make sure it is in a good place, because the power cord to the motor is only eight feet long.

Make sure that power to the receptacle has two legs of 120 volt going to it. There has to be a neutral and ground also.

Make sure the receptacle is 'Nema L14-20R'.

image 118

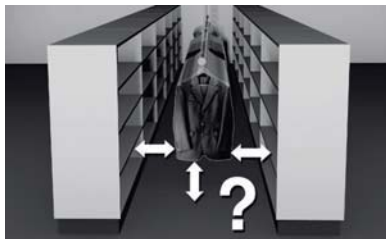


#### **Are the ceiling joists too high or too low?**

The distance to the floor from the bottom of the ceiling joists should be a minimum of 15 feet 6 inches.

Note: You can position the motor to go up between the trusses to get more height.

image 119



#### **Is there enough room in the aisle?**

Pay attention to where the hang bar is going to be when it is full down. Is it going to be in the middle of the aisle where it should be? Is the loaded hang bar going to bump into shelving on the way down?

image 120



#### **Make a sketch on paper** of how your sections are going to go up.

Look up and sort out which way the Drive Section is going to face. The power supply or obstructions will help you decide this. Do you have to tuck it up between the joists? Is there anything in the way?

image 121



#### **LiftNStore layout**

The 32 foot LiftNStore has four sections. Everything starts with the Drive Section.

image 122



**There is a Filler Section** bolted onto each end of the Drive Section.

image 123



**The End Section** is bolted onto one of the Filler Sections.

*Note:* The End Section is identical to a Filler Section except it has the Safety Brake on it. Mount the Safety Brake as far from the Drive Section as possible.



image 124



**The 24 foot LiftNStore has three sections.** The Drive Section has a Filler Section bolted onto one end. The End Section is bolted to the other end of the Drive Section.

image 125



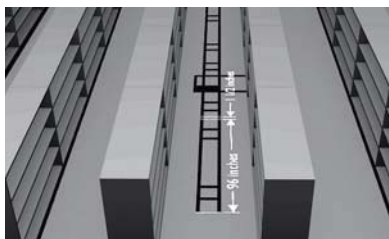
**Use your tape and figure out the footprint** of the LiftNStore on the floor. Look up and make sure your Drive Section will fit where you expect it to.

image 126



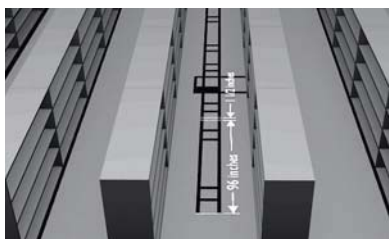
**Make a mark** on the floor showing where the end of the completed LiftNStore is going to go.

image 127



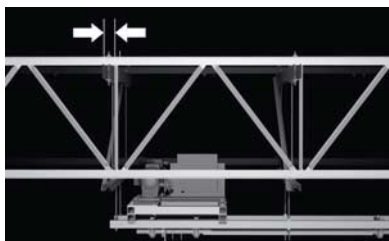
**Measure in 96 inches** and mark the floor. This is where your Drive Section will start.

image 128



**Measure 1 ½ inches** farther and this is where your first hang point will be.

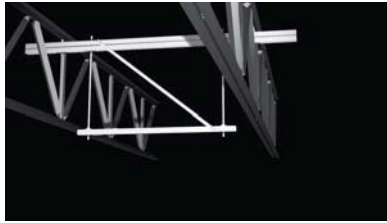
image 129



**Pick your first panel point.**

You will need to mount the first trapeze on the side of the panel point that will be closest to the motor. Remember you have to attach within 6 inches of the panel point.

image 130



## How to Build a Trapeze

Parts needed to build a trapeze

Unistrut, double (1)

Unistrut, single (1)

Threaded rod, 7 inches long (2)

Threaded rod, 3 feet long (2)

Rectangle washers (10)

Round washers (2)

Flange nuts (12)

Angle iron brace (1)

Tec screws (4)

image 132



### Step 1. Bolt the top rods into place.

**1. Make sure your marks** are in the right spot and within six inches of the panel point.

image 133



**2. Take a 7 inch threaded rod** and pass it up between the top cord pieces.

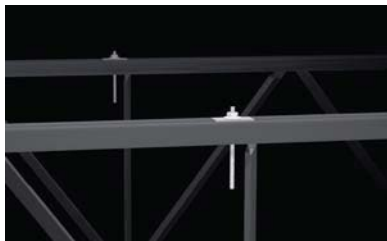
image 134



**3. Drop a rectangle washer** onto the rod and spin a flange nut down onto it. Leave about two threads sticking out of the top of the nut.

*Tip:* Sometimes there is very little room above the panel point. You might have to hold the nut and washer in place and thread the rod up into the nut.

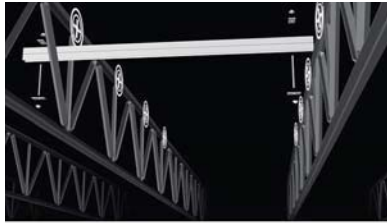
image 135



**4. Set up the threaded rod** on the other ceiling joist and you will have two loose rods hanging down.



image 136

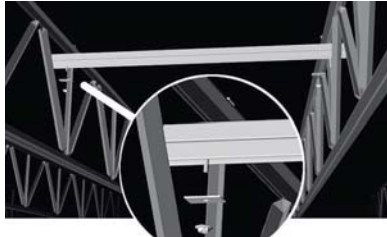


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**Step 2. Bolt the double Unistrut to the top cord.**

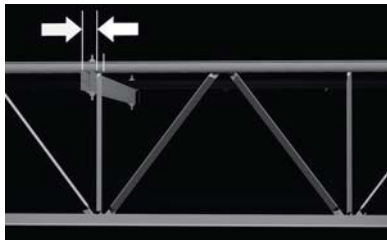
1. Get the double Unistrut centered and slide it onto both rods.

image 137



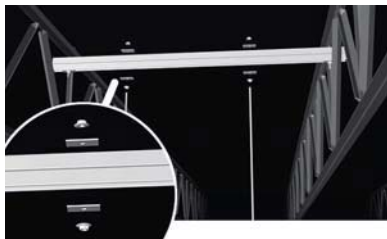
2. Use the rectangle washers and flange nuts hold it up.

image 138



3. Make sure you are within six inches of the panel points before tightening the flange nuts tight. You will not be moving these again. You now have the double piece of Unistrut bolted to the roof joists.

image 139



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**Step 3. Bolt the 3 foot rods into place.**

These rods have to go between the joists, not outside the joists.

1. Take a rod and pass it up through the double Unistrut.

image 140



2. Drop on a rectangle washer and spin down a flange nut. Leave about two threads poking of the nut.

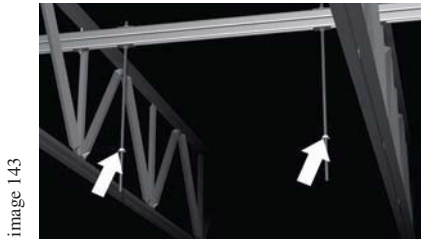
image 141



3. Slide up a rectangle washer and spin up a flange nut to lock it in place.



**4. Do the other rod** and you will have the two long rods hanging down. You will not be moving these again.

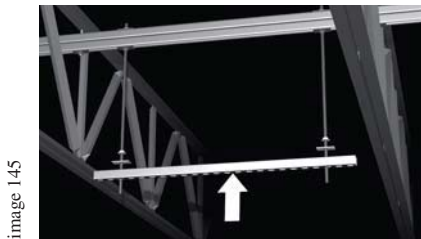


**Step 4. Bolt on the bottom single Unistrut.**

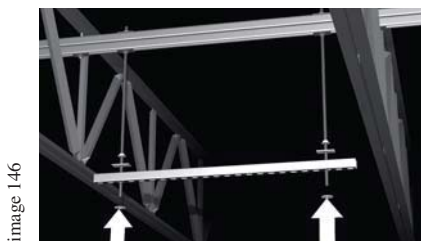
**1. Spin a flange nut** about four inches up the rod with the flange facing down.



**2. Slide a rectangle washer** up the rod.

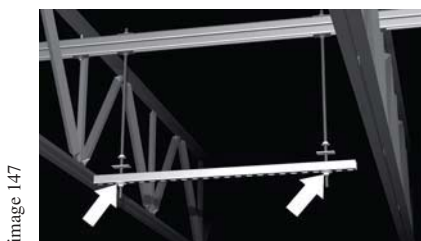


**3. Slide the Unistrut up** the rod with the open legs of the Unistrut pointing up.



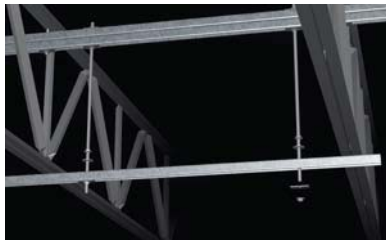
**4. Slide a round washer** up the rod.

*Note:* Most guys like to mount the Unistrut with the slots down. If the slots face up, you have to look up between the legs of the Unistrut to find the slot before you slide your rod in.



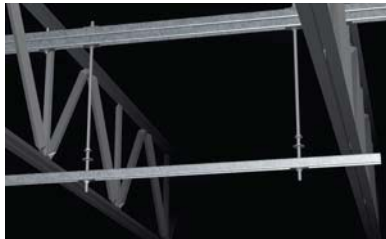
**5. Spin a flange nut up** the rod to capture everything, but don't tighten it yet. Make sure there are a few threads poking out of the bottom of this nut.

image 148



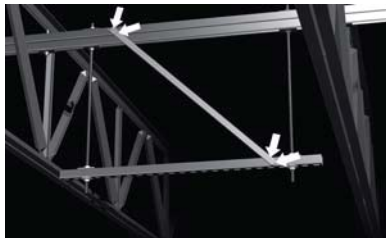
**6. Set up the other end** of the Unistrut the same way.

image 149



**7. Use the bottom nuts** to get the Unistrut fairly level and make sure there are a few threads sticking out of the bottom of each nut. Tighten the upper flange nuts to lock the Unistrut in place. You will not be moving this again.

image 150

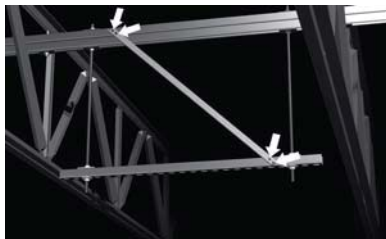


#### **Step 5. Brace the trapeze.**

The angle iron brace keeps the trapeze from racking side to side.

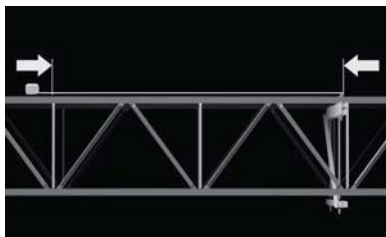
**1. Hold the angle iron** at about 45 degrees to the Unistrut.

image 151



**2. Run two tec screws** through each end of the brace and into the wall of the Unistrut. The brace is pre-drilled for you.

image 152

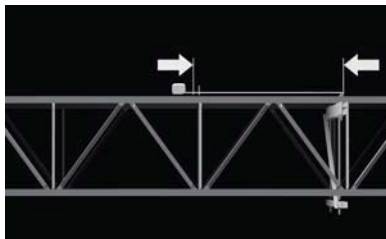


#### **How to mark Drive Section trapeze locations**

You are going to be making two marks and each mark is where the 9 inch rod is going between the top cord pieces of the ceiling truss.

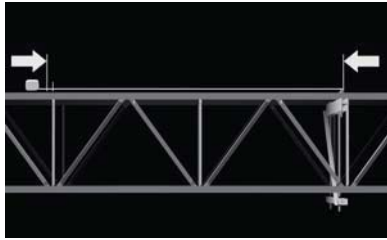
**1. Hook your tape** onto the first installed 7 inch rod and measure towards the next mount point.

image 153



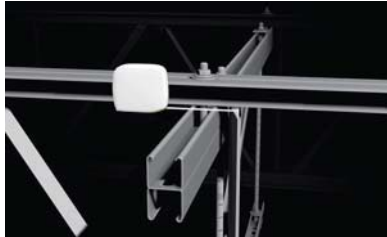
**2. Make a mark** at 46 1/2 inches.

image 154



**3. Without unhooking your tape**, keep measuring and make a mark at 93 inches.

image 155



**4. Remember** all the trapezes should be within six inches of a panel point.

image 156



**5. Put up the other two trapezes** for the Drive Section. When all three trapezes are in place you can mount the Drive Section.

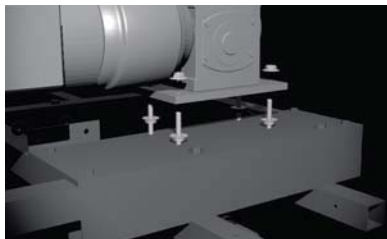
### How to prepare the Drive Section for mounting

**1. Park the scissors lift** where you are going to mount.

*Tip:* Park a wheel on one of the marks you put on the floor.

**2. Lift the frame** onto the top rails of the scissors lift. The empty frame weighs 140 pounds. To stop it from sliding around position it so the bolts straddle the rails.

image 159

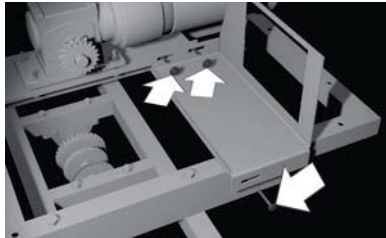


**3. Mount the motor.** On the thick mounting plate for the motor you'll see the four mounting studs. There'll be two flange nuts on each stud. Take the top flange nuts off.

Adjust the lower nuts so there is about one inch of thread showing. You will be adjusting these lower nuts later on to tighten the big chain.

The motor weighs about 130 pounds. Lift it onto the studs and put the flange nuts back on. Screw these down just finger tight. You will be adjusting the lower nuts to tighten the big chain later.

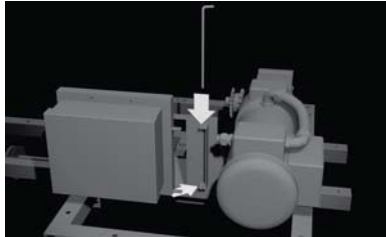
image 160



#### 4. Mount the Limiter Box.

Next to the motor you will see two slotted holes with some loose bolts hanging out. Use these to attach the Limiter Box, but leave them finger tight for now. You will be adjusting these later.

image 161



#### 5. Mount the Control Box.

Find the Control Box and the bent hinge pin. Put the box in place and drop the pin into the hinge holes. For now it is ok if this box swings freely like a door, later you will lock it in place with a tec screw.

image 162

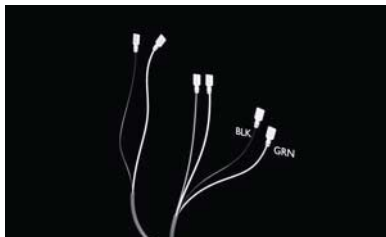


#### 6. Hook up the Electric.

You will see six wires coming out of the motor with spade connectors on them. These are low voltage DC lines and they go onto the limiter switches.

**The upper limiter switch** gets the red wire and the white wire. It does not matter which end of the switch they plug into.

image 163



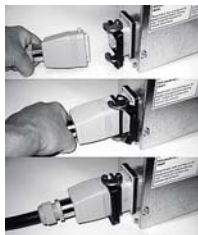
**The lower limiter switch** gets the green wire and the black wire. It does not matter which end of the switch they plug into.

image 164



**The third limiter switch** gets the white wire and the black wire. It does not matter which end of the switch they plug into. These two wires are the longest and they go to the switch on the 'J-Hook' assembly.

image 165



**Plug in** the big box-like connector and latch it down.

image 166



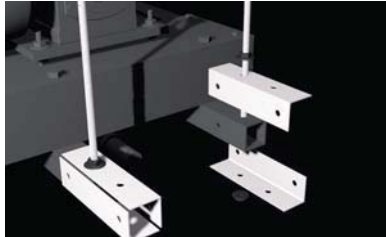
### 7. Set up the corner hang rods.

Each corner gets two L-Brackets. These are the long bent plates with four holes punched in them.

The bottom flange nut should have a few threads poking out.

The top flange nut should be only finger tight, you will be loosening this soon. If you tighten these nuts all the way down now, they will be very hard to adjust.

image 167



#### Parts needed for each corner:

Threaded rod, 2 feet long

Top flange nut

L bracket, on top

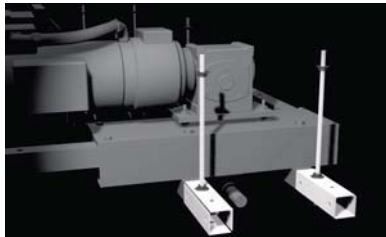
Square tube frame

L bracket, under

Lower flange nut

Set up the rods in the middle of the frame. These are held in place with flange nuts and they can be tightened down all the way.

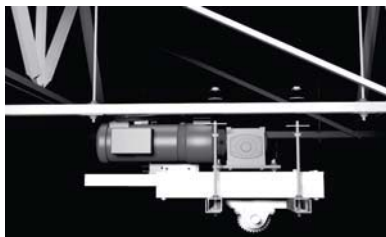
image 169



### 8. Set up the top nuts.

Go to the top of each rod and spin on a flange nut with the flange facing up. Have about four inches of rod sticking out.

image 170



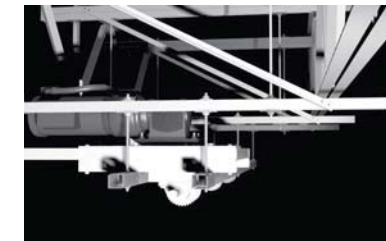
### 9. The preliminary mounting.

Raise the scissors lift and pass the six threaded rods through the Unistrut.

Take your time, this can be a little tricky.

Before passing the six threaded rods up through the Unistrut, make sure you have the correct washer on top of the flange nut. The round washer touches the slots of the Unistrut. The rectangle washer touches the open legs of the Unistrut.

image 171

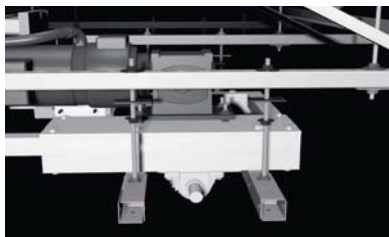


#### Make sure you are mounting straight.

When mounting cross ways to the ceiling joists, use your tape to measure from a wall or other fixture. When mounting in-line with the joists, you can count the open Unistrut slots to make sure you are going straight.



image 172



**When you put your rod up through the Unistrut** make sure you have the washer set up right. Spin down the top flange nut and make sure that a couple of threads are sticking out of the top of the nut. The lower washers and nuts should be low and not touching the Unistrut.

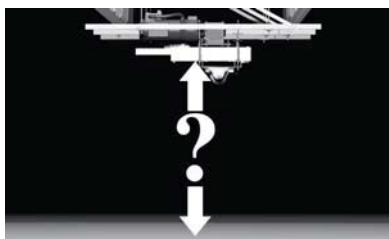
Later you will be using the top nuts to level the frame. When it is all level you will tighten the lower nuts. For now the lower nuts should be loose.

image 173



**Lower the lift a little** to see that the Drive Section is hanging from the top nuts ok. Check to make sure the power cord will reach the outlet box.

image 174

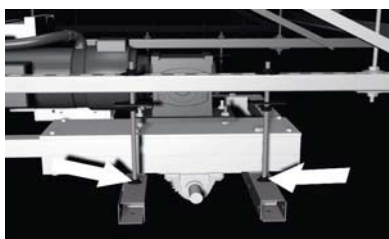


### 10. Check your height.

Measure from the floor to the top of the frame. You will need 15 feet and 6 inches minimum. More is fine. If you are too low, raise the frame by screwing down the top nuts.

Target wants at least 8 feet 10 inches clearance under the lowest hanging bike tire. Some of their forklift loads are 8 feet high and they do not want to hit the bikes.

image 175

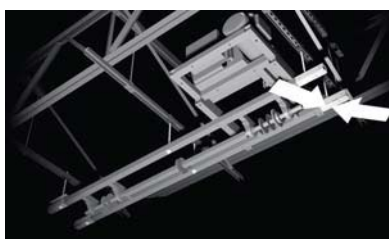


### How to Level the Drive Section

When you are done with this step your frame will be level and locked in place. All the nuts at the top of the rods will be fully tightened.

The nuts at the lower end of the rod (touching the square tube frame) will be snug, but not fully tightened down yet. This is because you will be loosening the corner nuts when you bolt on the other sections.

image 176

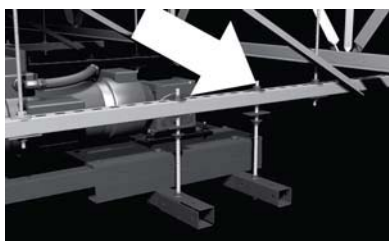


### 1. First corner.

Start leveling by locking in only one corner. Start with a corner on the heavy end of the frame. Pick the corner that is NOT closest to the motor.

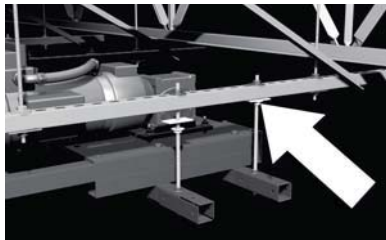
If you start with the other corner, it acts like a teeter-totter and you will spend a lot of time readjusting things.

image 177



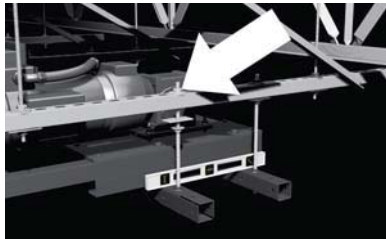
**Go to the nut at the very top** of this rod and turn it so there are at least five or six threads sticking out of the top of the nut. It is ok if there are a couple of feet of threaded rod sticking out of the top of the Unistrut. That might be necessary because of low ceiling joists.

image 178



**Go to the top of this rod** and spin up the lower nut and fully tighten it. You will not be adjusting these anymore. Your first corner is now locked in place and everything along the whole machine will be made level to this corner.

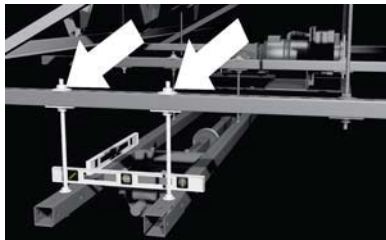
image 179



## 2. Second corner.

The next corner will be the one closest to the motor. Put your level across the frame the short way. Turn the nut at the top of the rod to adjust the level. Make sure there are always some threads poking out of the top of the top flange nut. When it's level, tighten the two top flange nuts together for good.

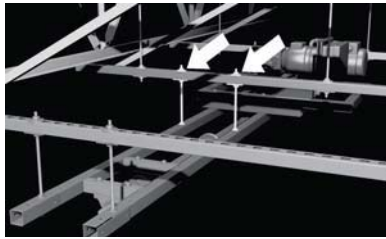
image 180



## 3. Corner three and four.

Go to the far end of the Drive Section and do these corners one at a time. You will be using your level both the long way and the short way to get it right. When the frame is level, tighten the top nuts.

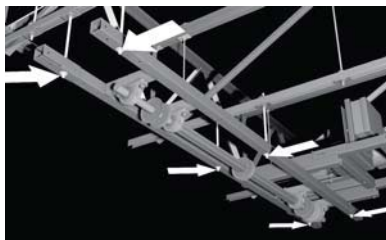
image 181



## 4. Middle rods.

When all the corners are level, you can set and lock in the middle rods.

image 182



## 5. Finishing up.

When you are finished look up at the mounted section. There should be only a few threads sticking out of the bottom flange nuts. If you have more than an inch of rod sticking out, cut the rod back with your Sawsall. Measure from the floor to the top of the frame again. Write this measurement on your Job Order.

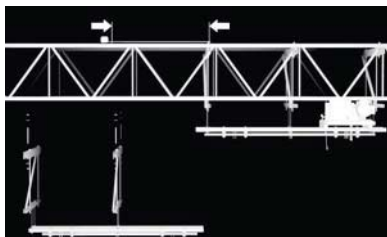
image 117



## Make sure your power cord reaches the outlet box.

Clear off any loose parts or tools, you don't want these falling on anybody. Next we'll bolt on the other sections.

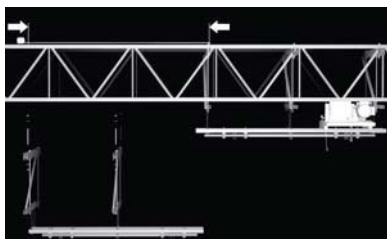
image 184



### How to measure for new Trapezes

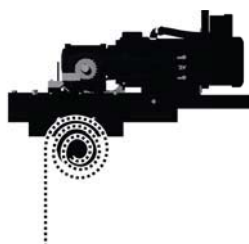
1. Hook your tape onto the last hang rod.
2. Measure out 49 ½ inches and make a mark.

image 185



3. Without unhooking, measure out to 96 inches and make a mark.
4. These two marks will be the center of your next two trapeze installations.

image 186



### How to mount the other sections

#### What is a 'Downside' and why is this important?

Every section has a 'downside'. Every strap and safety cable must unroll the same way, like toilet paper.

The way it comes off the roll is called the 'downside'.

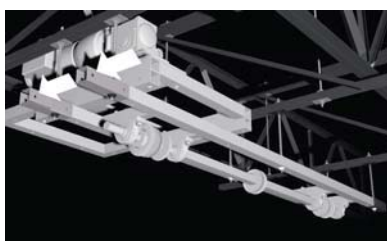
image 187



### How do you tell which side is the 'downside'?

On the side of every section there is a white name sticker. The “Drive Section”, the “Filler Section”, and the “End Section”. The sticker is always put on the 'downside' of the frame. As you bolt sections together make sure the stickers are always on the same side. If you do this wrong you will spend extra hours on the job making it right.

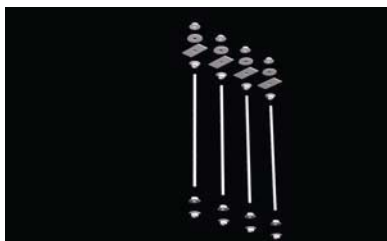
image 188



### What should be in place before raising the new section?

1. The new section will be hanging from Unistrut or a Trapeze. These need to be in place before raising the section.
2. The Drive Section should be leveled and locked in place.
3. When you look up you should see the L-Brackets sticking out of the ends of the Drive Section frame.

image 189



### Parts needed for the Hang Rods

- Hang rods, 2 feet long, (4)
- Flange nuts, ½ inch (16)
- Round washers, ½ inch (4)
- Rectangle washers (4)

image 190



#### Parts needed for the L-Brackets:

Hex head bolts, 3 inch x 7/16 (6)

Flange nuts, 7/16 (6)

*Note:* If you are going to be attaching another section to this one, you will need four new L-Brackets. When you are finished hanging this section the new L-Brackets will be sticking out of the end. They will be loosely held in place by the threaded rods.

image 191



#### Parts needed for attaching the Drive Shafts:

Roll pins, 7/16 x 2 (4)

Hex bolts, 1/4-20 x 2 1/2 inches long (4)

Flat washers, 1/4 inch (8)

Nylon hex nuts, 1/4-20, (4)

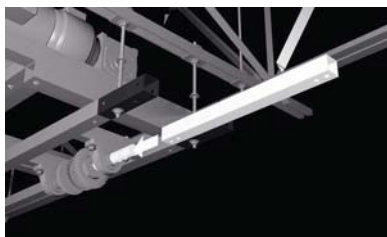
### How to connect the new section to the Drive Section

#### 1. Move your scissors lift to the right spot.

With your helper put the new section onto the lift.

*Tip:* Take a 2 x 4 from your packing crate and put it across the rails of the scissors lift. The section will be easy to move around if you do this.

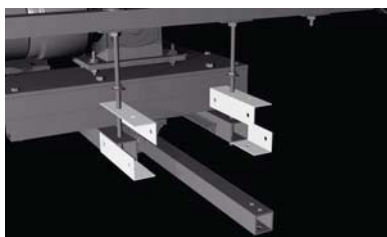
image 193



#### 2. Slide the square drive tube onto the round shaft sticking out of the Drive Section.

This square tube stays loose for now.

image 194

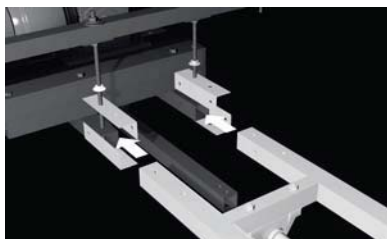


#### 3. Move the top L-Brackets out of the way.

On the end of the Drive Section the top two L-Brackets should not be tightened down yet. Spin the nut up the rod a few inches and slide the top L-Brackets up and out of the way.

The lower L-Brackets won't move because they are pinched between the frame and the lower nut.

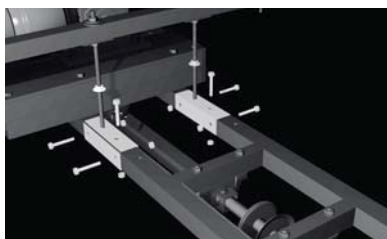
image 195



#### 4. Bring the new section into place.

Move it so the round shaft slides into the square drive tube. Butt the frames together and swing the top L-bracket back into place.

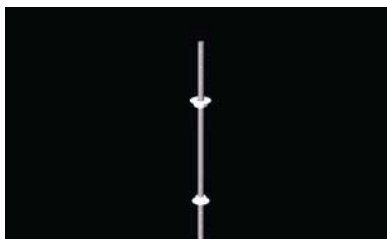
image 196



**5. Pass the 7/16 hex head bolts** through all the holes of the L-Brackets and frames.

Spin on the nuts, but make them only finger tight for now. These nuts will be fully tightened when it's time for the final alignment and that happens after all the sections are hanging.

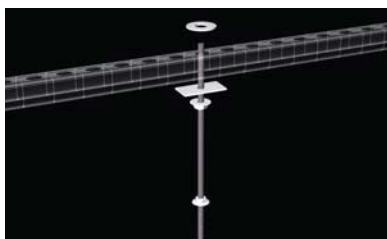
image 197



### How to hang the new section from the hang rods

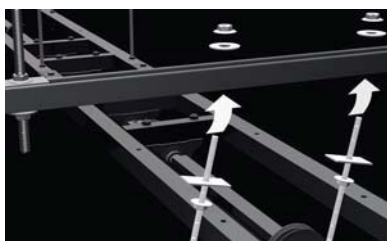
**1. Spin two flange nuts** onto each hang rod. Spin them in about four inches with the flanges facing out.

image 198



**2. Figure out which washers** you need to capture the Unistrut. The round flat washer touches the slots and the rectangle washer touches the open legs of the Unistrut.

image 199



**3. Start at the end closest to the motor.**

Put the right washer onto your rod and pass it up through the Unistrut. Drop the other end of the rod into the hole in the frame.

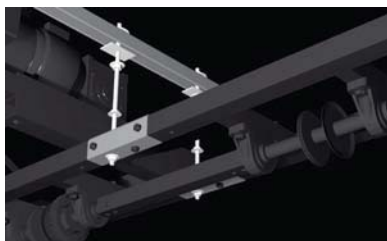
image 200



**4. Add the top nuts.**

On top of the rod, drop on the correct washer, then spin down a flange nut. Make sure there are a few threads sticking out of the nut.

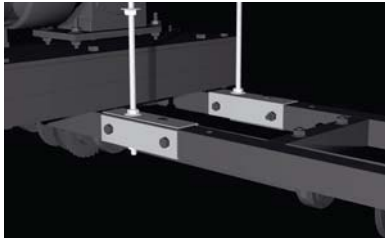
image 201



**5. Add the bottom nuts.**

On the bottom of the rod, spin a flange nut up under the frame. Make sure there are a few threads sticking out of the nut.

image 202



#### 6. Tighten the nuts.

On the end of the frame touching the Drive Section, tighten the nuts pinching the frame. You will not be moving these again.

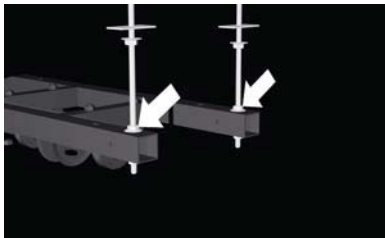
image 203



**7. L-Brackets** IF you are going to be attaching another new section to this one, you will have to set up the new L-Brackets. These go on the open end of the new section.

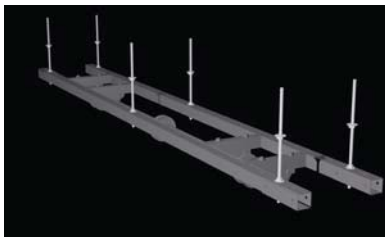
Do not tighten the nuts touching the top L-Brackets because you are going to have to move these top L-Brackets out of the way for the next section. The nuts under the frame will be holding the lower L-Brackets in place.

image 204



**8. IF** this is the last section to bolt on, you can tighten the nuts on top of the Frame all the way down. No L Brackets.

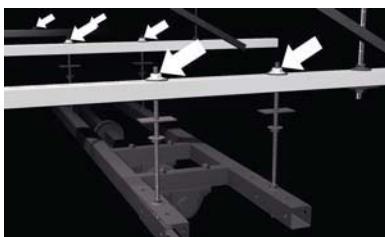
image 205



#### 9. Finishing.

All four rods should be sticking up through the Unistrut. At the top of the rods, the lower flange nuts should not be tightened at all, and there should be a couple of threads sticking out of the top nuts.

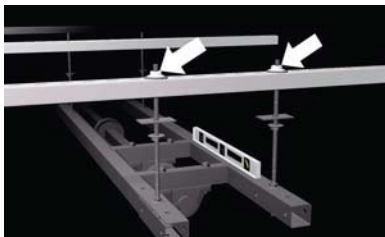
image 206



#### How to level the new section

*Note:* You will be adjusting the nuts on top of the Unistrut to level the section. Do not tighten the nuts below the Unistrut until your section is completely leveled.

image 207

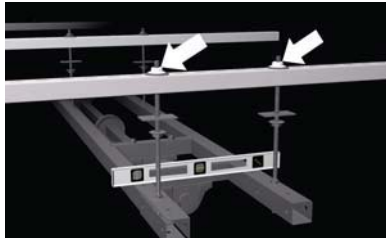


#### 1. Put your level longways on the frame.

This is easier if you start with the nuts farthest away from the motor. Adjust the top nuts to level the frame the long way.

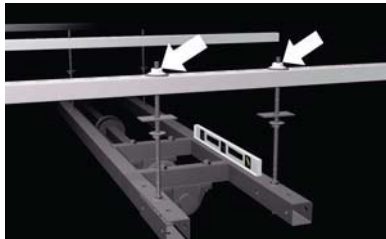


image 208



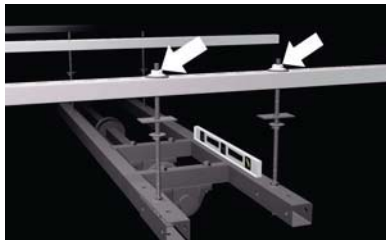
**2. Turn your level on the frame the short way**, and adjust the top nuts make it level.

image 209



**3. Check the level on the long way** again and adjust the top nuts if necessary.

image 210



**4. When the section is level**, go to the top of the rods and tighten the lower nuts. You will not be moving them again. The new section is now level and locked in place.

#### How connect the hardware

What you are going to be doing:

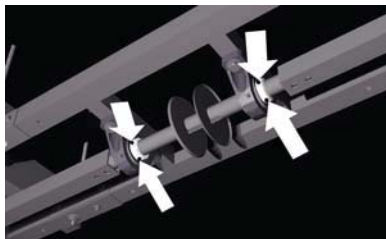
1. Setting up the Hang Bars on the ground.
2. Attaching the black Hang Straps to the spools.
3. Attaching the Hang Straps and Safety Cables to the Hang Bars.
4. Putting the chains on.
5. Adjusting the limiter switches.
6. Attaching the Safety Limiter Switch.

image 212



**Before you begin**, all sections are to be hanging from the threaded rods, every section is leveled and locked down. The round drive shafts between the sections have the square tubes slid into place, but they are not pinned yet.

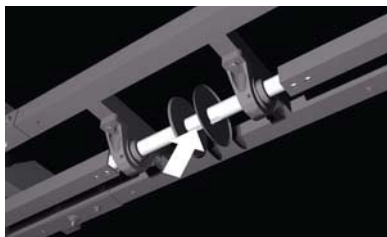
image 213



#### How to attach all the drive shafts

**1. Loosen all the set screws** with the hex wrench on the pillow block bearings, except for the bearings on the Drive Section. There are two set screws in the collar of every bearing.

image 214



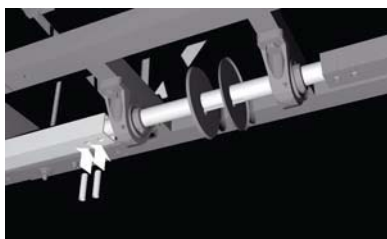
**2. As you attach the drive shafts**, make sure all the slots in the round drive shafts line up the same way. Usually they are all facing straight down. This makes all the straps roll onto the spools at exactly the same rate. If you do this right you will have to unpin and unbolt the drive shafts that are set up wrong. You will not know it is goofed up until you make your first test run.

image 215



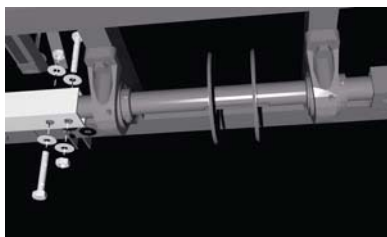
**3. Go to the Drive Section** and start with the first square drive shaft. Line up the holes in the square tubing with the round drive shaft. Use the 7/16 inch tapered punch and your hammer to do this. You will have to bump the round drive shaft back and forth a little in the bearings.

image 216



**4. Pound in** the first two hardened Roll Pins.

image 217



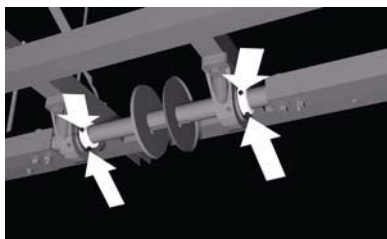
**5. Lock the pins** in place by passing the 2 12 inch long 1/4 inch hex head bolt through the center. Put a flat washer on either end of the roll pin and capture the bolt using the Nylock hex nut.

image 218



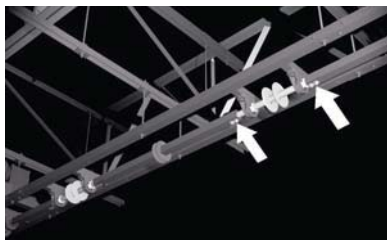
**6. Attach the other end** of the square drive shaft the same way.

image 219



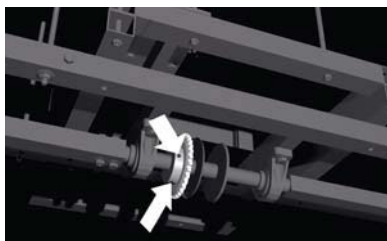
**7. Tighten the set screws** on both of the bearings at that end of the section.

image 220



**8. Move onto the next** square drive shaft and repeat this procedure until you have all of them bolted in place.

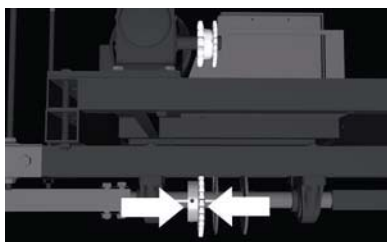
image 221



### How to align the drive gear

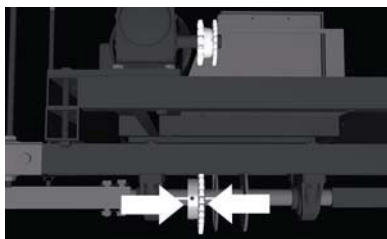
**1. Go to the big gear** on the long drive shaft and loosen the two set screws with the hex wrench. You are going to be bumping this into it's final place along the shaft.

image 222



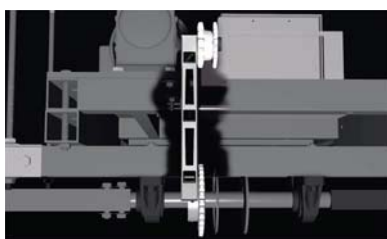
**2. Go to the small gear** on the motor. Put your level or other piece of straight steel on the flat face.

image 223



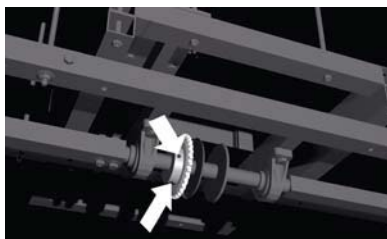
**3. Bump the big gear** on the long shaft back and forth until the flat faces of the gears are perfectly aligned.

image 224



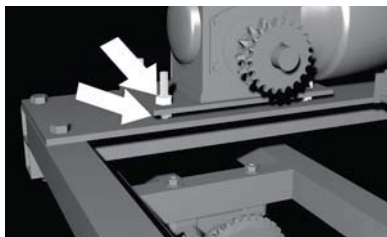
**4. Look for the light gap** between your level and the face of the little gear.

image 225



**5. Tighten the set screws** on the big gear when it is aligned.

image 226



### How to set up the drive chain

*Note:* If the chain is too loose it will skip or jump and you will hear an unpleasantly loud 'bang bang bang' noise. If the chain is too tight, you put pressure on the oil seal of the transmission and the fluid starts leaking out after a few months. When the chain tension is just right you can flop it back and forth a little bit. If it flexes the thickness of a pencil, that's just right. The motor feet are bolted onto the studs sticking out of the motor plate. There is a nut above and below the motor base.

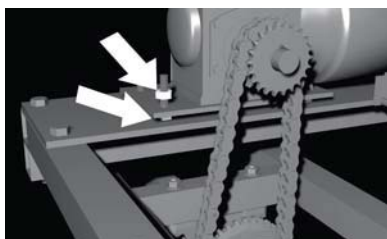
image 227



### How to adjust the chain tension:

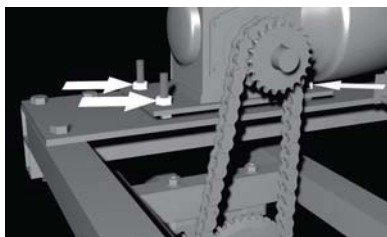
**1. Lay the big 80 chain** around the gears and close it with the master link.

image 228



**2. To get the right tension on the chain**, loosen the top nuts and turn the lower nuts to raise or lower the whole motor. Try to make all the lower nuts the same height.

image 229



**3. When you have the right tension**, tighten down the top nuts.

image 230



### How to attach the top of the straps

**1. Check to make sure** all your reels are unwinding the same way, check the 'downside' stickers on the side of the frames. All the stickers on the frames should be on the same side when you look up from the ground. If this is not right the backward section has to be unmounted and turned around.

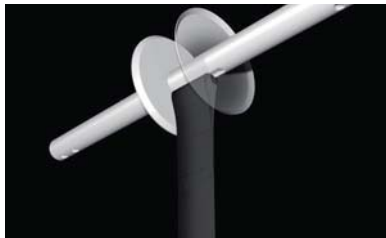
image 231



**2. Start with any spool.** Unwind a strap and let the metal end go to the ground. You will be holding the sewn loop at the end of the strap.

*Note:* The loop is made by folding the strap before sewing it down. The short side of this loop is called the 'tab' side. When the strap starts winding, this 'tab' touches the shaft first. If this is set up wrong, this strap will wind up tighter than the other straps and could bend the hang bar. You will have to go back and correct this if you do this wrong.

image 232



**4. Look at the spool flanges** and notice the punched holes near the center. Notice the groove cut into the round drive shaft. Turn the shaft so the groove is pointing down. Put the loop of the strap into the groove and push it a little to open the loop.

image 233



**5. Take the round strap pin** and slide it through the punched holes and through the loop. This pin holds the strap onto the spool. With the loop pinned in place, the strap should go up and over the shaft. The long end of the strap going to the ground needs to be on the 'downside' of the shaft.

Note: Make sure the 'tab' of the strap is touching the round shaft. This is an important detail.

image 234



### How to attach the straps to the Hang Rods

**1. Connect the Limit Switches**, see page 6 'Hooking up the Electric' if this is not done yet. The switches are not adjusted to their final positions yet. Right now they are only connected so you can run the lift up and down.

image 249



### 2. Go down to the ground.

With the top of the straps connected correctly, use the push button to move the machine into the UP position. Bring the bottom metal tab at the bottom of the strap up to about chest level. This is the best height to work at.

image 236



### 3. Attach the Spade Bolt to the metal tab.

Use the hex head bolt, 3/8 x 3/4 long and the 3/8 Nylock locking nut. The threads should be into the nylon but the tab should still be able to swivel. Mount all the Spade Bolts the same way so they look good.

image 237



**4. Spin a 7/16 flange nut** about 1 1/2 inches up onto the Spade Bolt with the flange facing down.

image 238



**5. Slide a hang bar up** onto the Spade Bolt using the right hole. Lock the Spade Bolt in place with a flange nut coming up from below. You will not need any washers.

Make all the hang bars level by adjusting the nuts on the Spade Bolts.

image 239



**6. When all the Hang Rods are hanging** it is time to bolt them together. Slip a Hang Bar Connector into the open ends of the Hang Bar.

image 240



**7. Line up the holes** and pin these in place using the hex head bolts, 3/8 x 2 inches long. Lock them down with 3/8 flange nuts. You do not need any washers.

image 241



### How to set up the Bike Hooks

*Note:* Set up the hooks so they are short hook, long hook, short hook, etc. The Hang Rod should be at about chest height so it is easy to work on.

**1. Start with a Short Bike Hook** and poke the threads through the right hole in the Hang Rod.

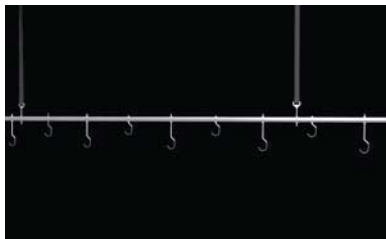
image 242



**2. Spin down a flange nut.**

When there are a couple of threads poking out of the top of the nut, tighten up the bottom flange nut.

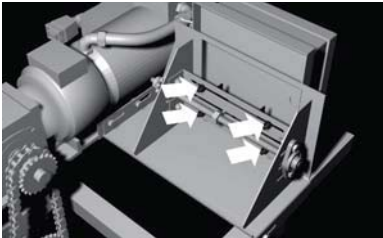
image 243



**3. Your hooks should all be in-line** with the Hang Rod and all facing the same way.



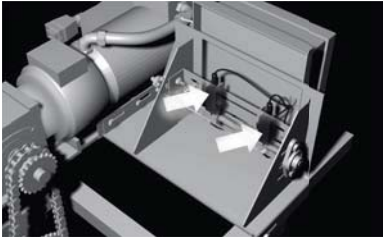
image 244



### How to set the Limit Switches

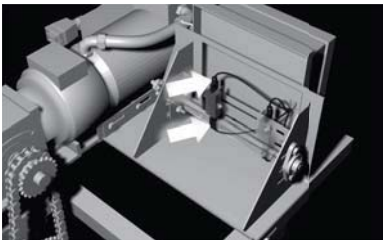
*Note:* You are going to be sliding two switches back and forth to get them in the right positions. The switches are held in place with hex nuts, use your ½ inch wrench.

image 245



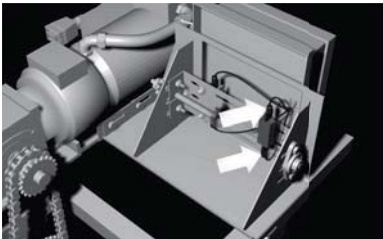
**The switch closest to the motor** is the Upper Limit Switch and the switch farthest away from the motor is the Lower Limit Switch.

image 246



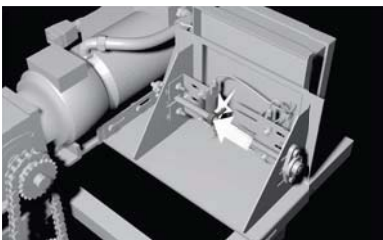
**The wires going to the Upper Limit Switch** are Red and White.

image 247



**The wires going to the Lower Limit Switch** are Black and Green.

image 248



**The switch is triggered** when the small square bar hit it. The square bar is welded to a big hex nuts that run along the threaded shaft.

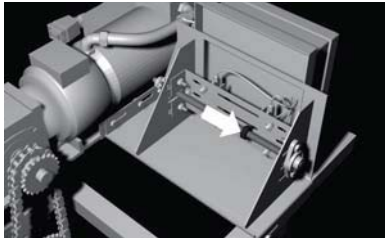
image 249



### How to set the Lower Limit Switch

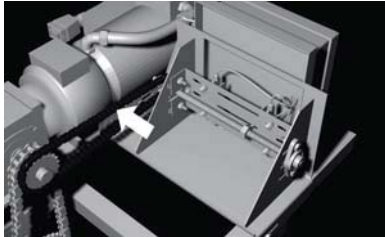
**1. Run the Hang Bar down** until it is between 6 ½ and 7 feet off the ground. This will be the working height of the Hang Bar when it is full down.

image 250



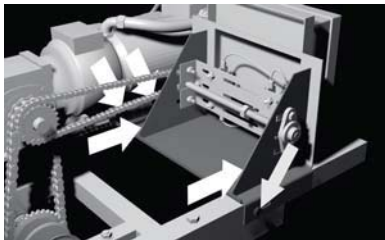
**2. Spin the long Threaded Limiter Rod** until the Limiter Nut farthest away from the motor is all the way to the Lower Limit Switch.

image 251



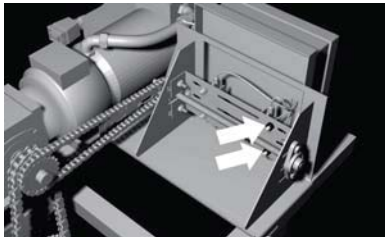
**3. Bring the Small Chain** and the Connecting Link up to the Drive Section. Drape the chain around the sprockets and close the chain with the Connecting Link.

image 252



**4. Slide the Limiter Box** to tighten the chain. The chain should have a little slack in it. If the chain chatters when you run the lift, the chain is too loose and you will want to slide the Limiter Box back farther. Tighten the three screws under the Limiter Box to lock it in place.

image 253



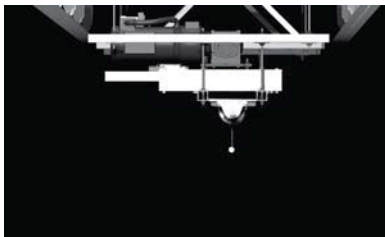
**5. Loosen the hex nuts** until you can slide the Lower Limit Switch, the one farthest from the motor. Slide the switch until the button is pushed down by the square bar.

image 254



**6. Lock the switch** in position with the hex nuts.

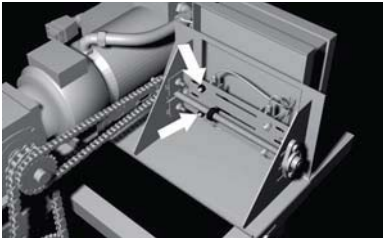
image 255



### How to set the Upper Limit Switch

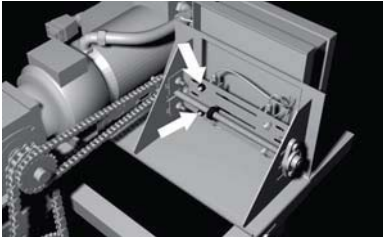
**1. Run the Hang Bar up** until the strap buckles are about 2 inches away from the spools.

image 255a



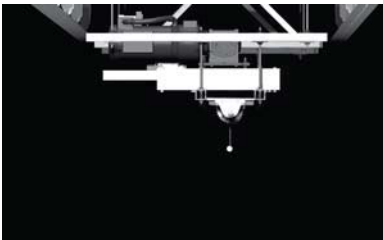
**2. Loosen the hex nuts** until you can slide the Upper Limit Switch, the one closest to the motor. Slide the switch until the button is pushed down by the square bar.

image 256



**3. Lock the switch** in position with the hex nuts.

image 255



### How to attach the Safety Cable

**1. Run the Hang Rod up** to it's top limit.

image 258



**2. Unwind the Safety Cable** until the threaded cable end is down to the Hang Rod.

image 259



**3. Spin a flange nut** about 2 inches up onto the threaded cable end with the flange facing down.

image 260



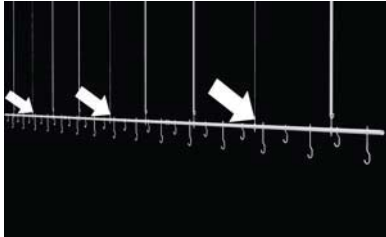
**4. Drop the threaded cable end** through the Hang Bar and spin on the lower flange nut.

image 261



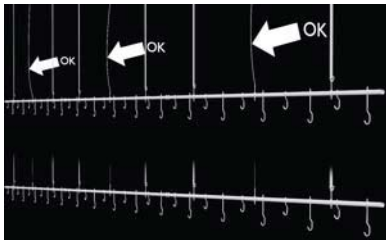
**5. Make sure** there a couple of threads sticking out of the lower nut and tighten down the top nut.

image 262



**6. Set up** all the Safety Cables.

image 263



**7. Run the Hang Rod full up** and watch the Safety Cables. When starting to wind up, the Safety Cable should be hanging limp. The Safety Cable should never look like it is being pulled tight.

image 264



**8. If the Safety Cable is too loose**, you can unbolt it from the Hang Bar and give it another wrap around the spool.

image 264



**9. If the Safety Cable is too tight**, you can unbolt it from the Hang Bar and unwind it one wrap from the spool. You can also massage the cable while it on its spool to loosen it a little.

image 266



**Bolt the End Caps** onto the open ends of the Hang Rod and you are done with the mechanical part of the install.

image 267

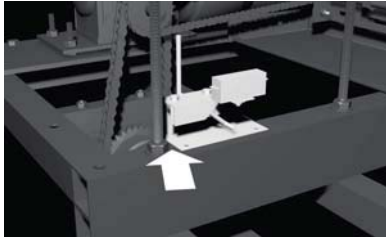


### How to Install the Third Limiter Switch, the 'J-Hook'.

**You should have the Upper Limit Switch locked** into position and the Hang Bar all the way up.

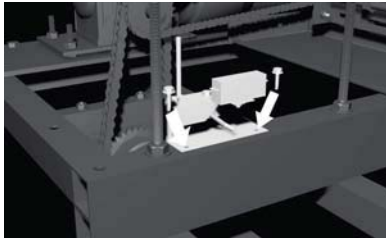
On the J-Hook Assembly, loosen the two hex head bolts so the 'J-Hook' slides high up into the sleeve.

image 268



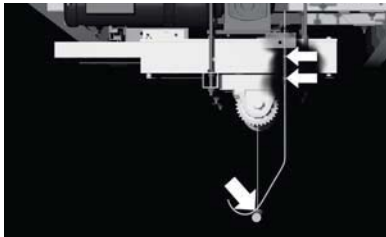
**Place the J-Hook Assembly** on top of the square tube Motor Frame so the tab with two holes is almost touching the nut on the suspension threaded rod. The 'J-Hook' will be touching the Hang Bar when you are done.

image 269



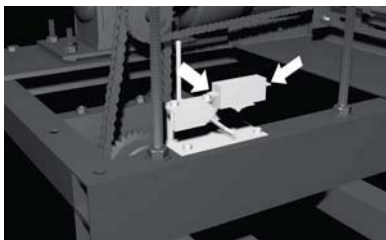
**Using two Tec Screws**, screw the tab in place. The Tec Screws are self starting and self tapping, so do not look for any start holes.

image 270



**Slide the 'J-Hook' down the sleeve** so it is just touching the Hang Bar. Tighten the hex head bolts to lock the 'J-Hook' in place.

image 271



**From the Control Box**, find the Black wire and the White wire. Push the wire connectors onto the tabs sticking out of the switch. It does not matter what connector goes onto what tab.

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### **Before you leave the site:**

**The most important paperwork** you will need on the install is your Work Order issued from Lift & Storage Systems, Inc. Before you leave the site you **MUST** have the signatures of the GC and or the OSR. If you do not get these signatures they do not have to pay us and that is not good.

**Clean up** all your messes. Clear away any litter, loose parts, trash and crate material laying around.

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**If you have to leave the site** before installing there are three things you should do:

1. Call LiftNStore before you leave and let them know what's going on. They will schedule a different install date.
2. Write a note on your Work Order.
3. Have the GC or OSR sign your Work Order.

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**Do not to start an install** if the site is not ready, if the power is not in place, or if there are things that need to be moved.

**Tip:** Do not open the crate unless you are ready to install. If you open a crate and leave it overnight, you can expect pieces and parts to be missing in the morning. Sometimes they will move your crate during the night because it was in the way.

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### **What if there is stuff in the way?**

This could be a heater, lights, ductwork, gas lines, sprinklers, etc. Get in touch with the GC, General Contractor, right away and show him what the problem is. If it is going to take more than two hours to get things cleared away, you can leave the site but only with a sign off and permission directly from LiftNStore. If you do not have both of these, do not leave the site.

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### **What if there is no power box in the ceiling?**

**Get with the GC** and show him what the problem is. You can start your install if they are going to get to it quickly.

**If you are not going to get power today**, there is another option. You can do most of the installation now and come back to finish when the power is in place. You can install everything except the hang bars, cables and straps. Take your tools and all loose parts with you. Call LiftNStore before you start and they will schedule the finish installation.

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### **What if the scissors lift is not there, is too short, or is unsafe?**

Check it out and make sure the down rigger feet extend all the way out and down, it goes all the way up, the safety chains are in place, and the railings are all pinned in place.

If there is something wrong call the rental company and get it resolved.



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**What if there is not enough room for the lift to be installed?**

Sometimes there is shelving in the way that does not show up on the blueprints.

Get with the OSR, Owner Site Representative, and show him what the problem is. He might decide to leave an eight foot section off and go with a shorter lift.

Write this on your Work Order and get his signature before opening the crate.

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**What happens if there is a section left over after the install?**

Call LiftNStore and get orders from Shawn Jones.

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**What if the lift really can't be mounted where the blueprints say?**

Get with the GC and the OSR and show them what the problem is. You can usually vary a few inches from the print. If it is more severe than that, you will not be installing today.

They will have to get in touch with Structural. They will figure out the new location, work out the load details, and redraw the layout.

Write this on your Work Order and get the OSR's signature before leaving.

Call LiftNStore and tell them what's going on. They will schedule a different install date.

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**What if the roof trusses are too high, more than 26 feet off the floor?**

Before each lift is crated, LiftNStore checks the store blueprints to get the distance from the bottom of the truss to the floor. Most ceilings are normal height and we send the black 15 foot straps. If the ceiling is high we send the black 20 foot straps.

When you open the crate you will find all the straps in a thick plastic bag. Every bag is marked showing either 15 or 20 foot straps.

**If the bottom of the truss is high**, between 21 and 26 feet off the floor, make sure you have the 20 foot straps.

**If the bottom of the truss is higher** than that you will have to make longer trapezes. This means you will be going shopping at The Home Depot or other big hardware store. Pick up 18 threaded rods, 6 feet long, 1/2-13 thread. You will also want 9 pieces of 6 foot long angle iron for the diagonal braces.

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**What if the roof trusses are too low, lower than 15 feet six inches off the floor?**

Unless you can tuck the lift up between the joists, it is going to be extra low. Get with the GC and show him what the problem is.

This is usually not a big deal, but you do have to note it on your Work Order and have the GC sign off on it before opening the crate.

Also, call LiftNStore and let them know what the actual machine to floor measurement will be.

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### **Disclaimer:**

Lift & Storage Systems, Inc. is not responsible for injury or damage if the LiftNStore is overloaded, improperly loaded, bikes have not been secured to the bar, or bike hooks are not in the locked position.

### **Warnings:**

- Do Not Overload. Overloading will void any warranties. 600 pounds per 8 foot section is the maximum weight allowed. Overloading could cause serious injury to people and major damage to the LiftNStore.
- Death or serious injury can result from falling items. Secure all hanging items to keep them from falling or tipping when the Hang Bar is raised or lowered.
- Keep areas under the LiftNStore clear and open when operating. Do not allow people to walk under the LiftNStore while it is running. Use of traffic cones or barricades may be required when using the LiftNStore.
- Always watch the Hang Bar when raising or lowering.
- Do not climb on, hang from, or play on any part of the LiftNStore. This machine is designed to hold merchandise only, not humans.
- Keep all controls away from children.
- Do not lift the Hang Bars. This could cause the Hang Straps could come off the Reels.
- The LiftNStore safety systems are not to be bypassed or circumvented. The purchaser is responsible for purchasing the LiftNStore with applicable safety features required by their given area and fulfills their particular needs.
- In case of fire do not use this machine.
- Any repair or adjustment must be performed by qualified maintenance personnel and only.
- Before any repair or adjustment are made all hanging items or loads must be removed.
- Hanging goods should allow for full 'head room', 7 foot minimum, when bar is in the full 'UP' position. Always allow enough headroom for all fork lifts, mobile ladders, etc. that are being used in the area of the LiftNStore.
- When not in use, the Hang Bar should be left in the full 'UP' position. This will prevent people from bumping into the hanging goods.
- Failure to follow safety and operational rules will void all warranties.
- Your LiftNStore is equipped with a Freefall Arrestor that prevents the goods and Hang Bar from falling if there is a mechanical failure.
- If you hear a snapping sound and see jerking, STOP the LiftNStore immediately! Cut power and call maintenance.

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### **How to Use the LiftNStore**

Note: Lift & Storage Systems, Inc. is not responsible for injury or damage if the LiftNStore is overloaded, improperly loaded, or if Hang Rods have not been properly secured to Hang Straps.

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### **How to Load the LiftNStore**

Spread out load when starting to load the Hang Rod.

Do not bunch up your load at one end of the Hang Rod. This could make the other end tip up and may dump your load.

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### **How to bring the LiftNStore Down.**

1. Make sure nothing is below the LiftNStore.
2. Push and hold the Down button. The machine will automatically stop when it is in the full down position.

Note: You can stop the lift at any time by letting off the button.

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### **How to make the LiftNStore go Up.**

1. Make sure your load is evenly distributed along the Lift Bar.
2. Push and hold the UP button. The machine will automatically stop when it is in the full up position.

Note: You can stop the lift at any time by letting off the button.

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