TREADWALL® M6 Install Manual

Rev. 010710a

The manual is comes with a check list. As you go through we encourage you to check off the steps.

The Treadwall is a large, but not complicated machine. None of the steps in this manual are particularly difficult, but it is important to follow all of the steps carefully.

The order of assembly is important at certain points, so read each page. A video accompanies this manual, A play-through before you start is highly recommended.



Requirements:

Treadwall installation is a full day's work for two people. The installers should have mechanical aptitude and some experience with mechanical assembly.

Two Stepladders eight foot and sturdy are required. If you don't have them, rent them!

Other tools:

VSR Electric drill with bits (and extension cord if it is not cordless)

#2 Phillips bit

Combination wrench set - particularly the sizes 3/8", 9/16", 3/4".

Socket wrench set - particularly the sizes 3/8", 9/16", 3/4".

Hammer

8" crescent wrench

Screwdrivers

Tape measure

Work aloves

Allen wrench set

Pair of pliers with nippers

2 carpenter's aprons

Knife

Eye protection

Vice-grip pliers

Small jar or tube of Vaseline

Silicone spray lube

Hand cleaner

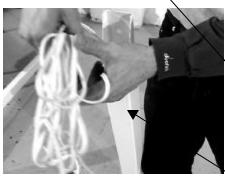
Spray cleaner and rags

Carpenter's apron (to hold small parts and tools)











Setup and unpacking:

Set up a neat and organized workspace. It makes the whole job more pleasant and contributes to safety. Remove the packing materials from the work area – you will be working with ladders.

You should have some sort of table-high surface to put tools and small parts on where they will be easy to find and out of the way. In addition you will need a long space out of the way where you can lay out all the long parts.

The panels go on last, so put them to one side until needed.

- Remove wrapping from large parts being careful not to damage the surfaces. Take small parts out and unwrap them. Don't unwrap the rock holds until the end.
- Check the parts against the list, and look them over for shipping damage. You must make damage claims within 10 days of delivery.

Some of the nuts, bolts and washers are shipped attached to the appropriate parts. The bolts, nuts, and washers are in the proper orientation and order and should be kept the same way during assembly.

Frames:

The side frames are in two parts - top and bottom. Each bottom section has angled joints that slide into the top section.

Make sure the frame-parts are lined up right way around Don't assemble the frames wrong-way around. They're hard to take apart! Top and bottom sections each have 5/8" holes (for horizontal braces) on the rear leg. Find these holes and make sure they are on the same leg – at the back of the frame – when you assemble.

□ The lower frame with a wire is the right lower frame. String the wire from the lower frame through the top section. Make sure you don't pinch the wires while assembling.

□ **Assemble each frame**. Put together the rear joint first. Make sure the rear joint is completely together before trying to put together the front joint.

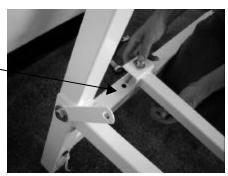
Horizontal braces are long rectangular tubing with L-shaped fittings welded to each end.

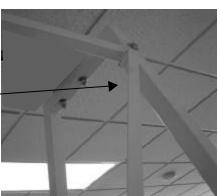
X-braces are long and short flat strips with holes in the ends.

- □ Attach a horizontal brace to the right frame on the back near the bottom. Attach a short x-brace on the outside as shown. The large washer, lockwasher and nut go on the inside.
- Attach another horizontal brace to the bottom member of the right frame.
- □ Attach the left frame the same way to the other end of these horizontals.
- □ **Bolt on the upper horizontal.** Attach a long x-brace to this horizontal at each end as shown.
- □ **Turn out the two largest turnbuckles** (with jaw-style ends) so that they are almost at their maximum length.
- Attach a turnbuckle at each side of the Treadwall, connecting the ends of each cross-brace together.
- □ **Tighten the turnbuckles** evenly and firmly so that they are about the same length. You will adjust them later to align the machine.







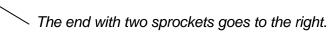






Main Shaft:

The main shaft has four bearings and three sprockets.





- □ Raise the shaft to top of the frames. Position the ladders slightly in front of the frames as shown. Line up the holes and place the mounting bolts with washers.
- □ **Tighten the bearing-bolts** down firmly to the frame tops.



Installing the Channels

The *channels* are largest pieces of the Treadwall. They are marked right and left.



- □ Hook the right channel onto the shaft just inside of the square bearing. This channel with the control panel attached is quite heavy - a two person job. One person on the ground holds the channel in place while the ladder person bolts it onto the bearing.
- □ The channels bolt to the square bearings with special bolts that have a built-in washer. Install three bolts the two front ones and the bottom rear one but only tighten the bottom rear bolt in the bearing at this time. Leave the two front ones loose.
- □ Install the left channel on the other end of the shaft.

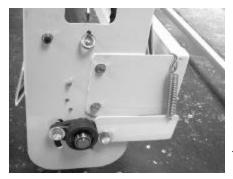
 Again, only install the two front bolts and the bottom rear bolt and only tighten the bottom rear bolt.

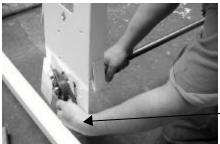


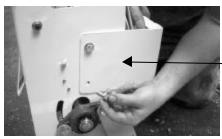
Drive Chain

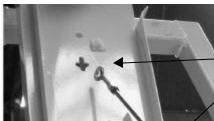
The *drive chain* connects the pump with the main shaft.

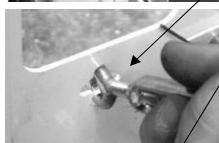
Install the #40 drive chain between the pump and the sprocket on the upper shaft. This chain will be adjusted later.

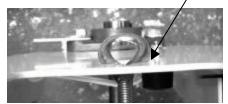














Bottom shaft, Back-guard, Channel X-bracing:

Bottom shaft is a 1" diameter shaft with two large sprockets. One sprocket is fixed and the other is loose.

Back-guard is a long flat piece with wing ends.

X-Bracing is a 5/16" rod with a turnbuckle at one end.

- □ This is how the final assembly looks. The spring and lever arrangement makes the bearings self-adjusting. For shipping purposes, the bottom bearings are shipped in a separate bag along with the mounting hardware and instructions.
- Mount the bearings according to the instructions. Make sure the setscrews are fully retracted before trying to insert the shaft.
 The shaft should go in easily if the bearing is lined up properly.
 After tightening the bearing bolts, loosen them 1/8 turn so that the bearing is free to swivel and self-adjust (springs go on later do not install them now).
- Attach the back guard between the two channels at the back near the bottom. It is shipped bolted together to the spacer bar. Note the ends of the back guard. The extended part of the back guard goes down.

The *x-bracing* goes between the two channels - *turnbuckles* at the bottom.

Attach the x-bracing. To attach the x-braces, first extend the turnbuckles to almost their full length with equal lengths of thread showing inside each end of the turnbuckle. Slide the round end vertically through the special hole and turn the rod 90 degrees to lock it in place. Attach top ends first, then bottom (the turnbuckle goes at the bottom). The turnbuckles should be adjusted to the same length and tightened firmly by hand only. The lock-nut and lock-wire prevent them from loosening. Make the lock-nut tight and wire the turnbuckle as a backup.





Adjuster pipe:

Adjuster-pipe is a long pipe with a chrome sliding ring at one end.

Slide the adjuster-pipe into the channels from the side on which you want the adjuster wheel to be mounted. Usually it is mounted on the right, but space sometimes requires it to be on the left. The x-braces go to either side of the adjuster-pipe.

If there is an obstruction such as a wall on the side where you are slipping in the pipe, you will have to move the assembly around for clearance. Make sure that the two x-braces are on opposite sides of the pipe.

Adjuster Cables:

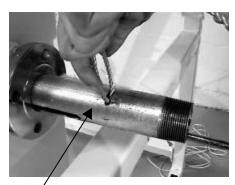
The *adjuster cables* wrap around the pipe and attach to the frame. There is a bend in the cable, which is not in the middle – there is a short end and a long end. Wrapping the adjuster cables is a bit confusing the first time, but if you follow these instructions to the letter it should go smoothly.

- ☐ Find the following parts (in hardware box):
 - 1) hook-ended turnbuckles (2)
 - 2) cables (2)
 - 3) 1/4 x 3" bolts (2)
 - 4) Clevis pins (2)
 - 5) Cotter pin
 - 6) Split ring
- ☐ Turn out one turnbuckle (with hook-hook ends) to its full extension and hang the it on the upper loop at the back of the right frame.
- □ Take one cable and push the bend into the hole at / the right end of the pipe. The short end of the cable should be going towards the <u>back</u> of the machine. (After winding, this end of the cable will pass under the pipe and attach to the front of the machine.)
- □ Push the 1/4"x3" bolt into the end of the pipe and through the loop of cable inside the pipe to secure the cable. The bolt will stay there by friction.
- Pull the cable up tightly to remove the slack and spread the cable out over the sides of the hole.
- □ **Hammer the cable down** where it comes out of the hole to flatten it against the pipe.
- □ **Lock the pipe** from turning (push the chrome ring onto the welded stud) before winding the cables.

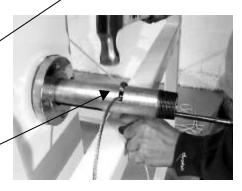
This diagram shows the direction of the wind as you look down on the cable. *It looks the same from both sides of the machine.*

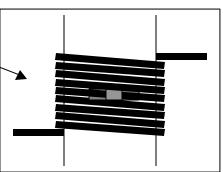
While winding, make sure that the cables form nice neat coils on the pipe.

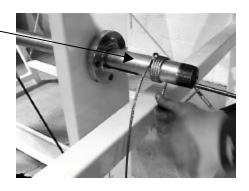
□ Wind the short end first. On the right side of the machine: as you wind the short end the coils will be coming toward you. On the left side of the machine: as you wind the short end, the coils will be moving away from you.







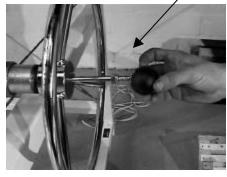


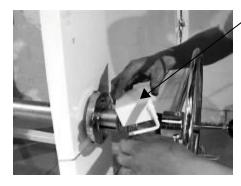












- After 4 1/2 winds, **attach the loop to the frame** with the clevis pin and cotter pin. On the side with the wheel (usually the right side) use a split ring instead of the cotter, and position the ring on the outside of the frame. This ring is for the instruction panel.
- Wind the long end of the cable while keeping tension so that it will not loosen.
 Slip the cable through the large loop at the back of the
 - frame and hook it to the turnbuckle. It will be obvious when you have the right number of turns.
- □ **Tighten the turnbuckle** to take out as much slack as possible. Use the hammer to tap down the cable around the pipe and work the cable into nice neat coils.
- Repeat these steps for the left side.
- □ **Push the wheel** over the threaded rod and screw it onto the pipe. Lock the pipe (with the chrome ring on the stud) and *tighten the wheel hard*.
- screw a nut, a lockwasher and the round plastic knob onto the lock-rod. Tighten up the locknut.
- □ **Turn the wheel** to move the channels back and forth several times to make sure the cables are working properly and tighten both turnbuckles.
- □ Stretch the cables: Lock the wall all the way forward and strike down hard on the exposed cables with a length of 2x4. Lock the wall all the way back, and repeat this process. This will stretch the cables about 1" in length.
- □ **Tighten the turnbuckles** one more time. *Tighten the turnbuckles as hard as you can by hand.* Don't use a tool to over tighten the turnbuckles or the cables may fray at the rear frame-loop.
- Put on the cable-guards. These little channels with hooks ride on top of the cable coils and keep out fingers. Hook it onto the front section of cable first. Then, loosen up the turnbuckle a few turns (hold the cable-coils with you fingers to keep them from unwinding) and work the back end of the cable under the other hook.
- □ Check that the coils are still even and **re-tighten the turnbuckle.**

The cables will stretch. Check them regularly for the first two weeks and monthly afterwards. Keep them tight. If you lube the cables with silicone spray they will last much longer and stretch to their final length faster.

Counter-timer, spacer bar:

Spacer-bar is a piece of 1 1/2" square tubing with a threaded hole at one end and a stud at the other (It is shipped bolted to the back-quard).

- Bolt the spacer-bar between the two channels about one foot above the adjuster pipe. Use the lowest of the three small holes. The stud-end goes on the left side the short bolt attaches the right end. The x-braces go on either side of the bar.
- Mount the counter-timer on the left channel using the stud at the end of the spacer bar.





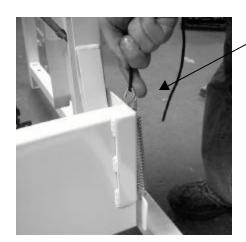
Wiring:

- □ **Frame wire at top of right frame**: Push wires through rubber-grommet hole in right channel and down through wire clips to the spacer-bar.
- □ Connect frame-wire to channel wires (two sets of bullet-connectors).
- □ Attach the wires at the bottom-back of the A-frame to the transformer. Extra cord is in the frame if needed. Excess should be coiled at the top of the frame and pushed into the leg.
- □ Wrap the gray cord around the spacer bar, running it across the Treadwall to the left channel and out through the hole at the counter-timer. Take the plastic plug off the bottom of the counter-timer and plug this cord into the power socket at the bottom of the circuit board.
- Attach wires to the spacer bar with ties leave no loose cord to catch moving parts.
- Plug in the transformer. The actuator lever at the bottom of the right channel presses a microswitch that runs the braking solenoid. Normally this switch is off, but when the climber's weight presses in the bottom panel on the wall, the switch actuates and stops the wall.
- IMPORTANT: The transformer is designed for use with 110 volt 60 or 50 cycle AC current.
 It supplies 12 volts DC at 1.5 amps to the Treadwall. Users with different supply voltages must use conversion transformers or other means to provide the proper voltage.
- □ The proximity sensor is not yet installed. It will be put in place along with the upper shroud (page 10). Once the proximity sensor is installed, plug it into the other jack at the bottom of the circuit board and close up the bottom of the counter-timer housing.









The Main Chains:

Protect floor under Treadwall from grease and wear gloves.

Remove one chain from the box. One person should hold the coil on edge and unwind it while the other raises the chain over the shaft.

- □ **Lift one chain** up to the main shaft and drape it over the shaft next to one of the sprockets. *Make sure the mounting tabs are facing out.* move the chain around the shaft until the two ends are equal at the bottom.
- □ **Lift the chain** onto the sprocket.
- □ **Repeat** for other chain.
- □ **Synchronize the two chains** so that left and right, the tabs with holes are directly across from each other. *If you don't do this, the Treadwall will not work!*

Line up one of the chain tabs with the horizontal spacer bar. Check that the other chain is also lined up at the other end of the spacer bar. If the tabs don't line up, adjust the chains until they are synchronized.

- Place the chains around the sprockets of the lower shaft and put on the master links. To pull the ends of the chain together, loop a piece of cord through the end links and draw it tight as shown. A cord is provided for this purpose packed in the channel-spring bag.
- Install the springs. Use the same cord to pull up the "s" hooks and clip them onto the top of the back guards.



The shroud and proximity sensor:

The shroud mounts at the top of the Treadwall, and the printed surface will be vertical. It slots onto the two front bolts in the square bearing and a final bolt goes in at the upper rear of the square bearing. Before starting, make sure the front bolts are loose and that there is no bolt in the upper rear hole of each square bearing.

- □ **Place the ladders** as shown, and lift the shroud to the top of the channels. Slot it onto the front bearing bolts
- Once the shroud is in place, put in the last two bolts to hold it securely and tighten all four bolts at each end.
- Adjust the drive chain: Above the pump is a push-down bolt that holds the pump from riding up. Loosen the lock-nut at the top of the adjuster and turn down the bolt until it contacts the top of the pump. Tighten the hold-down bolt finger-tight against the pump and tighten the lock-nut to keep it from turning.

Proximity sensor is a bracket with a black wire, shipped with the magnets and counter-timer in the parts box.

- □ Attach the proximity sensor inside the top of the left channel using the top rear bolt of the large square bearing.
- □ **Place the 3 magnets** on the shaft. The magnets stick to the shaft by magnetic attraction. Adjust the magnets until the center of the magnets pass under the proximity sensor with a 1/8" gap.
- □ **Bring the wire** down the inside of the channel through the clips and out through the hole near the counter-timer. Plug in the wire. (*Details on page 8*)
- □ **Turn the shaft** by pulling down the chains a few times to test the Counter-timer It should register one foot each time <u>two</u> magnets pass the sensor.

Panels:

Putting on the *panels* is tedious but goes better if you are organized. Check the chains again to make certain that they are still synchronized. (If you find that the chains are not synchronized when the panels are partly on, call us. We have a quick fix.)

Tools:

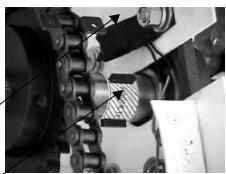
A VSR battery-operated drill with an adjustable clutch and a #2 Phillips bit.

A 3/8" wrench – either a small socket or combination wrench.

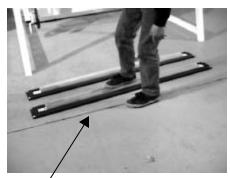
□ **Install a reinforcing channel** ("stiffy") onto the back of each panel before bolting to the chains. The stiffy slips into the holes when properly aligned.

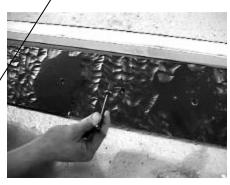
If the stiffy is a tight fit, you can place the panel face down on the







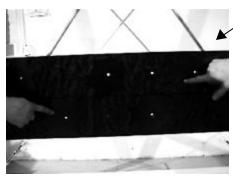














- □ Attach the stiffy. On the front of the panel there is one hole near the middle that does not have a flat 'island' around it. There is a bag of short round-head bolts in the hardware box. Screw one of these bolts through this special hole to hold on the stiffy.
- □ Slip the first panels into the front of the channels and bolt to the chains.

The nuts go to the rear. Make the bolts firm, but not tight enough to sink the heads into the panels. If you are using a cordless drill, use a very low setting on the clutch. On a DeWalt drill, we use a setting of 3.

□ **Align the sprocket.** After the first panel is installed, rotate it around by pulling the chains down until the panel has made one complete rotation. This will align the sliding sprocket on the lower shaft. You may have to tap the sprocket into alignment with a hammer.

IMPORTANT: NOTE THAT THERE ARE TWO TYPES OF PANELS – PANELS WITH WHITE CORNER BUTTONS AND PANELS WITH BLACK BUTTONS.

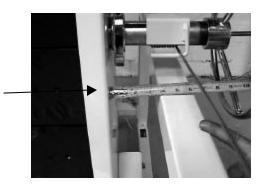
Alternate the panels. The black-button and white-button panels alternate during installation. The panels must be oriented so that the buttons face outward at the upper corners of the panel. This will insure that the hold-mounting holes will also alternate

As you progress, and the panels are moving up the back of the machine, it takes a lot of effort to push them down. This is normal. You will need to hold the panels in front to keep them from sliding up.

□ Use short pieces (12" or so) of 2x3 lumber to jam the wall. Simply slip them between panels at the bottom of the wall on each side. As the panels try to ride up, the block will hold them in place.

Align the main frames.

■ Measure the distance between the frame and the side of the right channel. This space should be 3 1/2". Adjust the rear turnbuckles to make this space 3-1/2". These turnbuckles should be quite tight when you finish. If this spacing is wrong the angle-adjuster may not work too smoothly - it may be difficult to lock the chrome ring onto the stud.



□ **Install the last three panels** by slipping them in from the bottom.

Run the panels around until the gap is at the bottom front. Slip the panels in one at a time and install the bolts. Use the side openings at the channel bottom to access the nuts for tightening. Double check the orientation of each panel. Be careful not to pinch yourself.

Before installing the last panel, double-check to make sure everything is right inside. We usually wait until the holds are on so we can test the machine.

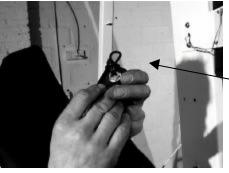
The last panel is somewhat awkward - be patient. Put the bolts and nuts in with the panel at the bottom or carefully rotate the panel upward until you can reach the nuts through the access hole.

Final adjustment of drive chain

The drive chain is kept in tension by the hold-down bolt at the top of the control panel (see page 8). The drive chain stretches at first and continues to lengthen during the first-month break-in period.

- □ Check the hold-down bolt at the top of the pump. If there is a gap between the bolt and the top of the pump, turn it down finger-tight again and re-lock it in place with the lock-nut.
- Make sure that someone at the facility knows how to adjust the hold-down bolt. Emphasize that the chain will stretch during the first week of use and the bolt will have to be re-adjusted. It should be checked periodically and adjusted if necessary.













Side Covers, Mat, Holds and Post Pads:

- Mount the side covers on the frame hooks. Use wire ties for the top grommets leave them quite loose. Use o-rings for the bottoms. Push an o-ring into each grommet and loop it back through itself.
- □ **Place the mat** between the frames and attach the loops around the front legs of the frame. The short folded section goes to the rear.
- □ **Attach** the LadderLine m rung set. Instructions are packed in the box.

The standard Treadwall hold set has 30 holds.

- □ **Unpack all the holds** and lay them out on the mat in front of the machine.
- □ Match the holds with hold-bolts. The bolt should project at least 3/4" from the back of the hold. Sometimes a few of the larger holds need longer bolts.

Bolt the holds firmly onto the panels. Start with one color and bolt one hold onto each 5th panel. Distribute them evenly from side to side as you go along. Repeat for each color. This will distribute the colors evenly around the machine, and you will have a few holds left to fill in any gaps. Each hold has a positive edge. Generally speaking, these positive edges should face up so that the climb will not be too intimidating, but put a few on as side-grips or under-clings to add interest. Once the holds are on you can fine-tune it by rotating holds and moving a few around. It's OK for some of the holds to share wall space with the LadderLine rungs.

□ Each color of holds can be a separate climbing route. Or you can combine colors to make a route. You will find that some routes are much easier than others

Very important - Don't allow larger holds to overlap onto the next panel. Most of the holds supplied with the Treadwall are designed so that they will not overlap, but some may need to be correctly oriented. Other holds from different suppliers may be larger. Also, holds must not stick out more than 2 ½" from surface of wall.

- □ Attach the two post pads under the cables on either side of the machine.
- Use 3 cable ties for each pad. position the ratchets at the bottom of the pad and space them evenly for appearance.

Cleaning up the machine completes the Treadwall installation.

Instruction Card:

A laminated instruction card with a ball chain is included with the Treadwall. Hang it from the right frame on the cable attachment pin. This pin uses a split ring instead of a cotter pin, and the instruction card hangs from this ring.

Purging the Hydraulic System:

Sometimes when the Treadwall is first assembled, the control system runs a bit rough and noisy - almost a grinding sound - and the wall doesn't descend smoothly. This is due to air in the system that foams into the oil and causes cavitation in the pump. To purge the air, put the wall at the steepest angle, set the control valve at the fastest setting, and pull the wall around steadily and slowly for about 15 seconds. Let the wall sit for about 5 - 10 minutes, and do it again. If you do this about 3 times, the air will percolate up into the reservoir where it belongs, and the wall will run smoothly.

Climbing tips:

- Some people like to climb fast and some climb slowly.
- Fast climbing provides a quick pump, and at easy angles an excellent aerobic workout.
- ♦ Slow climbing promotes fluid motion, balance, flexibility, and at harder angles a great upper-body workout.
- The braking system in the Treadwall insures that the wall will always stop before the climber reaches the bottom of the wall.
- Some climbers like the wall to operate continuously without the brake stopping the wall.
 A switch on the control panel allows you to put the Treadwall into this mode.
 Continuous operation is particularly good for aerobic climbing.
- Climbing is most comfortable when the speed of descent is matched to the climbing speed, so that the wall rarely stops. Adjust the speed dial as you climb to a comfortable level.

Why is climbing on the Treadwall one of the world's best forms of exercise?

- Climbing is a true whole-body exercise. Climbing naturally works out almost every muscle in the body.
- Climbing is non repetitive. Many forms of exercise work out the same muscles over and over, but not climbing.
- ♦ Climbing is progressive. Anyone can climb, but the more you climb, the better you get even if you climb for years and years.
- ◆ Treadwall Climbing promotes balance, stretching, flexibility, upper-body strength and aerobic conditioning. No other form of exercise is so versatile.
- Climbing is fun and engages the mind.
- ◆ There are no age limits and very few physical handicaps preclude climbing on the Treadwall.

The last word:

NOBODY LIKES GOING BACK!

Treadwalls get installed in the darndest places, sometimes hundreds of miles from where installers call home. Making that long trip across the panhandle and down through the wastelands to fix some stupid little problem is a project to avoid, even if you have a keen appreciation for big sky and deja-vue.

Its the little things that count - at least that's what we have found. Those little tiresome details have a tendency to sneak around to your backside and take a big bite. Here are some things that

have shown up on the whack-your-head-and-say-duh screen:
Masterlink or Monsterlink? Every masterlink has three parts. What if you leave off the plate with two holes? What if the spring clip isn't put on right? It can get pretty ugly!
Why are my cables all frayed? Oops – someone forgot to tell you to keep the cables tight. Stretch them! (page 7). Make sure someone knows: Tighten those turnbuckles every day for the first week!!! And show them how to adjust the drive chain hold-down bolt too!!!
Useem to have lost my bearings! Well – maybe not <i>lost</i> , but maybe <i>too tight</i> ?? The shaft bearings at the bottom of each channel must be totally free to pivot so they can self-adjust under spring tension. If the bolts are tightened, this whole system stops working, the wall will jam up, panels will start chipping, and hair will be pulled off of scalps. Better a little too loose than too tight!
What the hell is a Climbometer? Time? Distance? calories? Whatever. It ain't gonna work if the sensor and magnets aren't adjusted right. And treat that reed-switch sensor with respect! And make sure the wires are out of harm's way.
Bolts and nuts are falling down falling down falling down and for some reason the shroud only has one bolt on the right side! Yes – it's actually happened. Loss of concentration is my guess – or maybe glue sniffing. Check everything before putting on panels.
Mommy! Mommy! What's that thing sticking out of the Treadwall? Well technically, it a piece of 5/16 hot rolled round, threaded at one end. But now it's a chunk of twisted scrap metal that's gonna be nasty to replace – and all because someone forgot to lock down that internal turnbuckle. Make the lock-nuts really tight on the inside turnbuckles!!
Chain-chain chain chains that fool. Drive chain too tight? Works great for Ralph but Alice can't budge it. Too loose? Could be worse. Make that hold-down bolt <i>finger tight</i> , and lock it down, but don't over-tighten. Check it one last time before leaving, and <i>make sure someone knows how and when to adjust it!!!</i>
Hold it right there! Its all about the holds!, and if they are unclimbable, the Treadwall is too. Take a minute to try out the routes and adjust the holds to a friendly state, and make sure they are good and tight too!