

TREADWALL™ Model CP



INSTALLATION MANUAL

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TREADWALL Installation Manual

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. Look for Handy-Tips. They are closely guarded secrets that have been handed down from installer to installer. The order of assembly is important at certain points, so read each page. A video accompanies this manual, and it is highly recommended to review it before the installation

Requirements:

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

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

Other tools:

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

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

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

8" crescent wrench

Flat file and 1/2" rat-tail file

Pair of pliers with nippers

Tape measure

Small jar or tube of Vaseline

Cigarette lighter

Work gloves

Hand cleaner

Vice-grip pliers

Allen wrench set

Screwdrivers

Loktite thread-lock

Knife

2 carpenter's aprons

Eye protection

Spray cleaner and rags

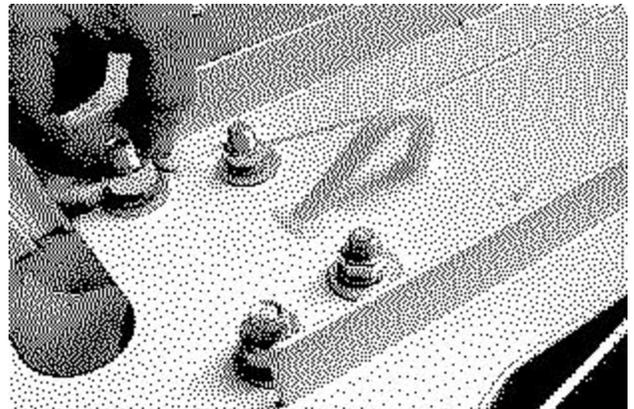
Handy-Tip: Use a canvas carpenter's apron. It saves a lot of time!

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.

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

Handy-Tip: We like to leave the mainframes wrapped till the end. It cuts down on scratches.

Once the parts are unpacked and laid out, **check them against the list**, and look them over for shipping damage.



UNPACKING

Set up a neat and organized workspace. It makes the whole job more pleasant and contributes to safety. Removing everything from the packing and discarding the packing materials is an important first step, particularly since 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

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

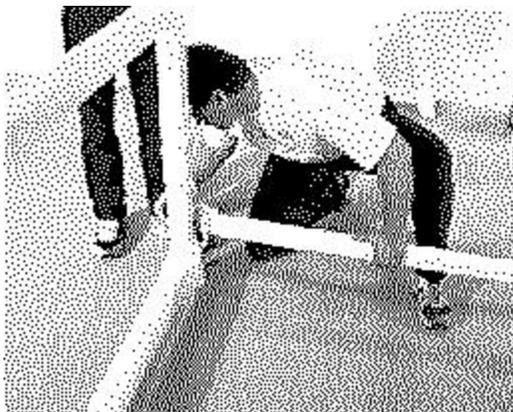
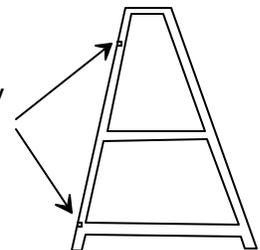
In addition you will need a long space out of the way where you can lay out all the long parts till you

FRAMES

- ◆ **Assemble the left frame**
- ◆ The *side frames* come in two parts - top and bottom. Each bottom section has angled joints that slide into the top section
- ◆ The rear joints are tagged for left and right - make sure they line up correctly.
- ◆ **Grease the joints** with Vaseline before assembling.
- ◆ Do the joints one at a time - first **tap the rear**



Handy-Tip: 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 when you assemble.



The *horizontal braces* are long rectangular tubing with L-shaped fittings welded to each end.

- ◆ **Attach a horizontal brace to the left frame.** It goes on the back near the bottom
- ◆ Notice that the horizontals have *tabs with holes* at each end. These must face up.

Handy-Tip: Put a little Vaseline on the threads. Make sure everything is lined up right. If the bolt feels cross-threaded don't force it in.

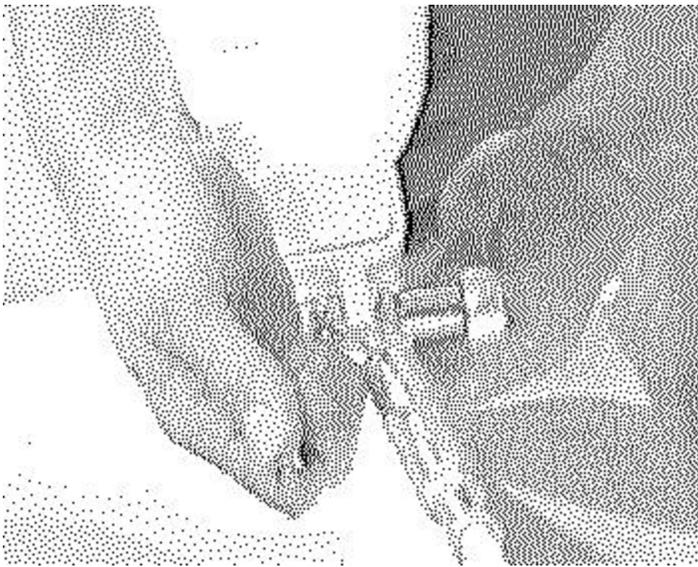
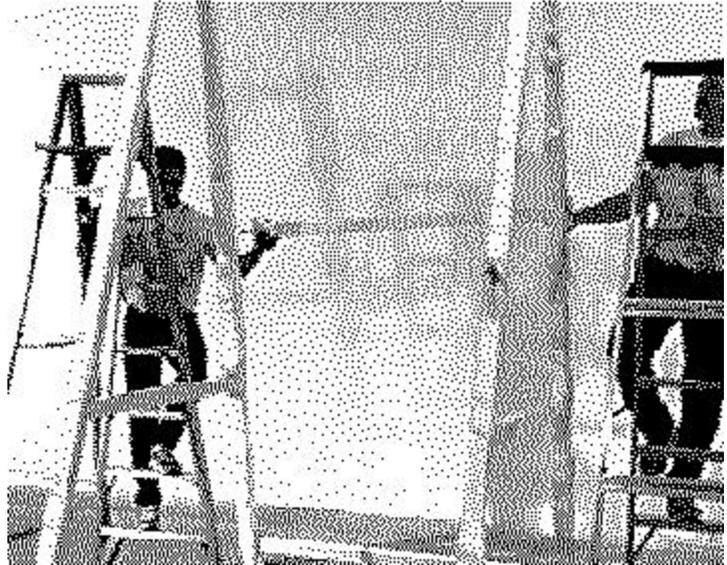
- ◆ **Rest the other end of the horizontal brace on the ground.** It will support the left frame.
- ◆ **Put together** the right frame.

Now the frame is beginning to take shape.

- ◆ **Position the ladders** towards the back of the frame and **bolt on the upper horizontal**.

Make sure *the tabs are pointing down*.

Handy-Tip: If those pesky tabs aren't oriented right then you won't be able to put on the x-bracing.

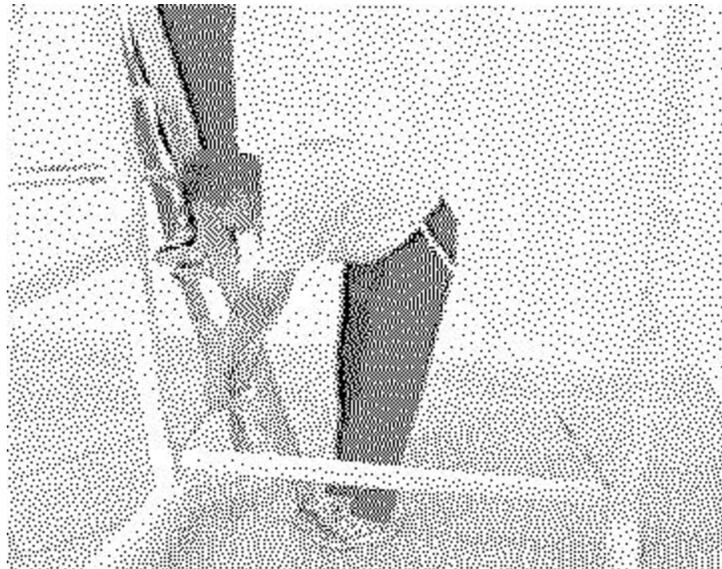


Tension X-bracing in the back makes the frame solid.

The **x-bracing** is a pair of 3/8" painted steel rods with turnbuckles.

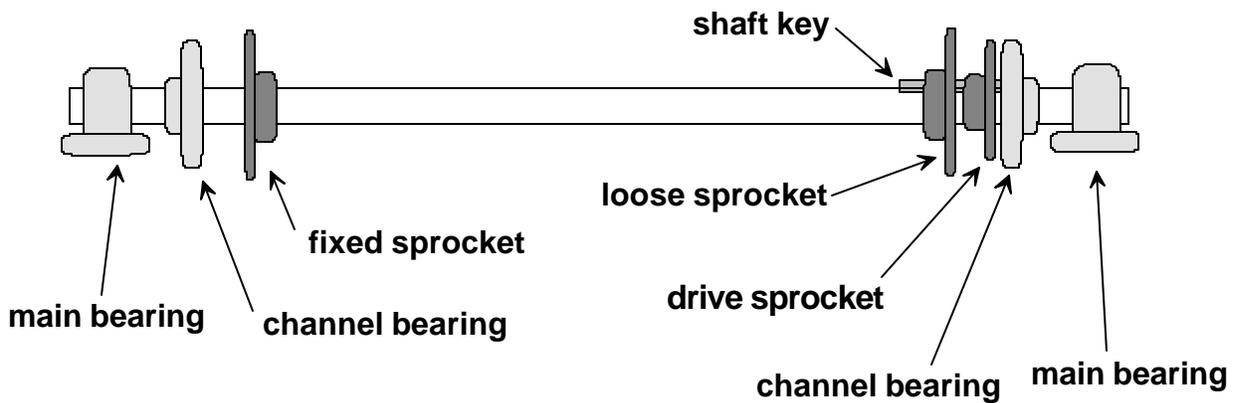
- ◆ **Attach shackle** to top horizontal tab.
- ◆ **Attach turnbuckle** to the tab at the opposite end of bottom horizontal.
- ◆ **Install second X-brace** and tighten turnbuckles evenly

Handy-Tip: These turnbuckles are what keeps the frame straight. You will adjust them later to align the machine.

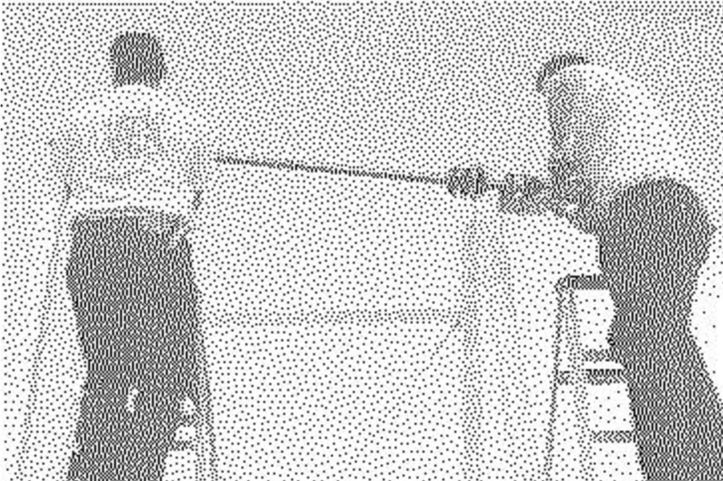


Shaft

Examine the main shaft which installs to the top of the frame. It has four bearings and three sprockets. At one end of the shaft the sprocket is fixed, and at the other end, the pair of sprockets are keyed.



Note that the *fixed sprocket* goes to the left. The *loose sprocket* remains free to slide back and forth so that it can self-align when the panels are in place. The smaller *drive-sprocket* will be fastened down with setscrews when the drive chain is installed.



Raise the shaft to top of the frames.

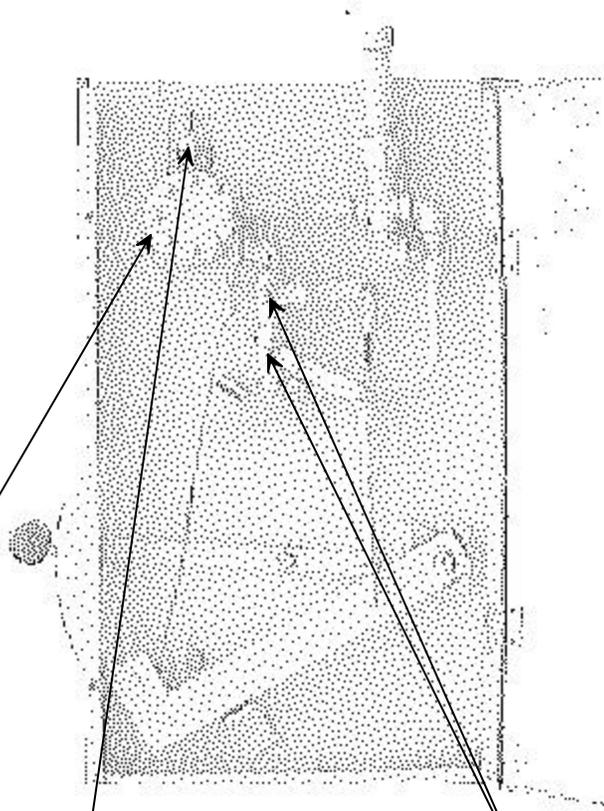
- ◆ Position the ladders slightly in front of the frames as shown.

Handy-Tip: Take the 1/2 x 4 1/2" bolts up the ladder with you. Put them in place - through the bearings and frame - as soon as the shaft is up to keep it from slipping. Safety First!

- ◆ **Tighten the bearing-bolts** down firmly to the frame tops.

Attach control panel to Right Channel.

- ◆ The **channels** are largest pieces of the Treadwall. They are marked right and left. When the Treadwall is fully assembled, the ends of the climbing panels slide down the slots on the inside of the channels.
- ◆ The **control panel** has a hinged cover and contains the hydraulic pump and control machinery that runs the braking system.



Take a moment to look at the pump assembly. This is the heart of the Treadwall.

The pump is attached to an oil reservoir and a simple circuit with two valves. When these valves are open, the oil circulates freely as the shaft turns the pump. If either valve is closed, the circuit is blocked, the oil cannot circulate, and the pump is locked up.

- ◆ **Find the right channel** and lay it down on two chairs with the smooth side facing up.
- ◆ **The control panel is attached to the channel** using the four bolts that hold the pump to the control panel. Remove these bolts and use them to attach the panel to the channel through the slotted holes in the channel. Each bolt must have a flat washer to slide against the channel and a lock washer to hold it tight.
- ◆ **The long tensioning bolt on the channel** will push the pump down (along with the whole panel) to adjust the drive chain tension. For now, the panel should be adjusted to the top of the mounting slots
- ◆ **Important: Do not overtighten the mounting bolts.** The four bolts should be just tight enough to compress the lockwashers fully. The tensioning bolt must be able to push the pump down without loosening the pump mounting bolts. This is important for future adjustment of the drive chain.

Install channels

The channels will now be raised and bolted onto the main shaft.



- ◆ **Hook the right channel onto the shaft** just inside of the square channel-bearing. This channel with the control panel attached is quite heavy - definitely a two person job. One person on the ground must hold the channel in place while the ladder person bolts it onto the bearing. Only the bottom two holes of the bearing are used.

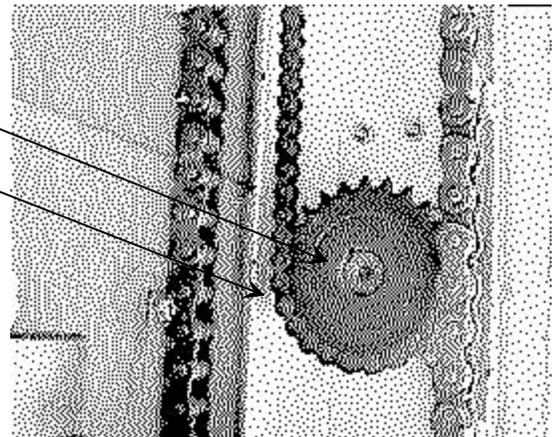
Handy-Tip: Installing the second bolt is easiest if the channel is lifted slightly from below.

- ◆ **Install the left channel** likewise on the other end of the shaft.

Install the Drive Chain

- ◆ The drive chain connects the pump with the main shaft
- ◆ **Install the small sprocket** onto the pump shaft and tighten the setscrews securely
- ◆ **Install the #40 drive chain** between the pump and the sprocket on the upper shaft.
- ◆ **Align the upper sprocket** and tighten the setscrews.
- ◆ **Use the long tensioning bolt above the pump** (on the outside of the channel) to push down the pump until all slack is taken out of the drive chain.

Handy-Tip: **Important** - This chain will stretch during the first two weeks of use and require adjustment. The adjustment is very easy as long as the pump-mounting bolts are not too tight (they should be just tight enough to compress the lockwashers). The simple adjustment procedure is on the inside of the panel door. *Make sure that a responsible person at the Treadwall location understands the procedure and the necessity of this adjustment.*

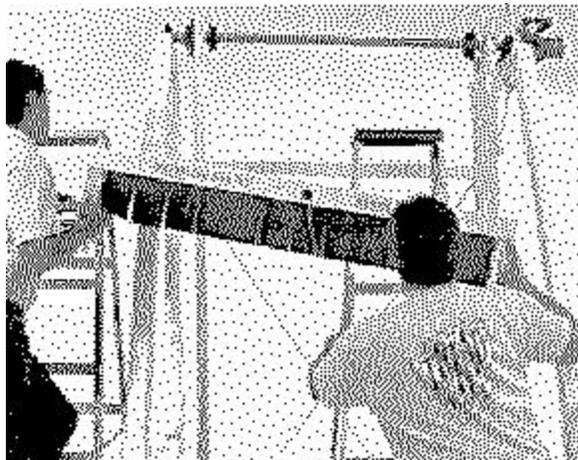


Install pulley bar

The **pulley-bar** is a large part with "Treadwall" printed on it in big letters. It goes between the two channels at the top of the machine.

- ◆ Place the ladders as shown, and **lift the pulley-bar** to the top of the channels.
- ◆ **Bolt** into place with the 3/8" bolts.

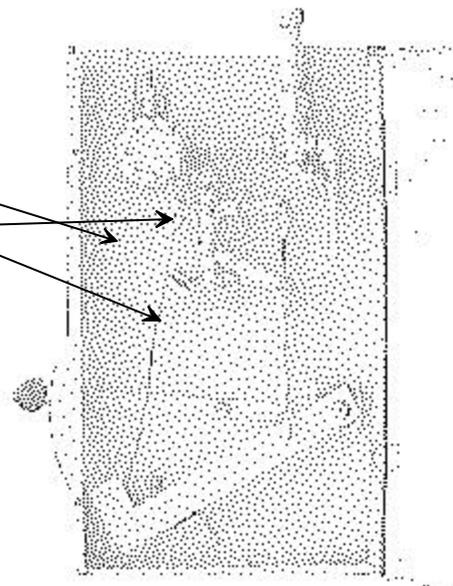
Handy-Tip: If you position the ladders right, you can hold the pulley bar on your shoulder while you put in the bolts - much more comfortable!

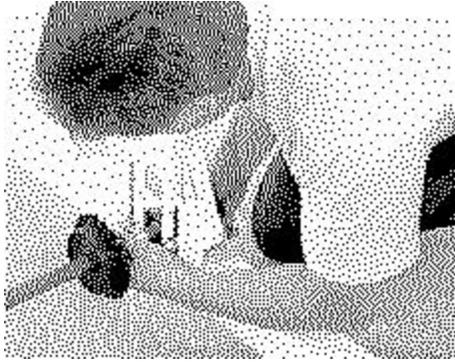


Attach the pulley line to the main lever.

- ◆ The end of the line that comes out of the right end of the pulley bar goes to the main lever.
- ◆ **Bring the line down** into the control panel, through the pulley in the main lever, and up to the loop just under the pump. Tie the control line securely to this loop

Handy-Tip: If this line comes loose it could pull out of the pulley bar. You don't want this to happen! Tie it securely!





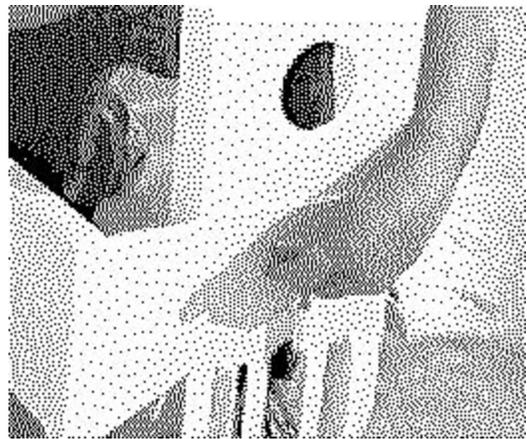
The **bottom shaft** is a 1" diameter shaft with two large sprockets. One sprocket is welded on and the other is loose.

- ◆ The welded sprocket goes to the left.
- ◆ **Place the shaft** into the two bearings at the bottom of the channels. Slide the bearings all the way on - up to the stop-collars.
- ◆ **Tighten the bearing setscrews**, but leave the bearing mounting bolts loose so that the bearings can slide up and down in the slots

The **back guard** is a part that looks a little like the pulley-bar but lighter. This attaches between the channels at the back near the bottom.

Handy-Tip: Look at the ends of the back-guard. The straight edge goes up. The angled edge goes down.

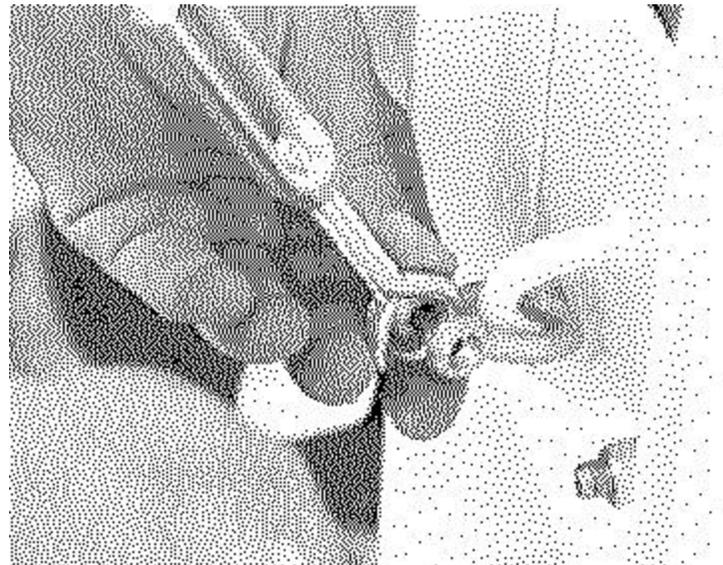
- ◆ **Bolt the backguard** onto the two channels with 3/8" bolts



There is **x-bracing** that goes between the two channels. It is 5/16" rod with a turnbuckle at one end and shackles at both ends.

- ◆ The turnbuckles go to the bottom.
- ◆ **Attach the shackles** to the loops on the channels.
- ◆ Leave the turnbuckles loose for now. They will be adjusted and tightened later.

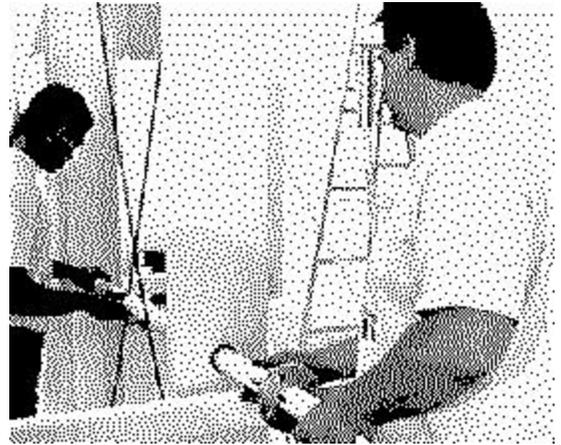
Handy-Tip: These rods are meant to keep the wall from swaying. They do not need to be too tight, and the turnbuckles should never be over-tightened.



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

- ◆ **Slide the adjuster-pipe** into the channels from the right-hand side.
- ◆ The chrome ring goes to the right
- ◆ The x-braces go to either side of the adjuster-pipe.

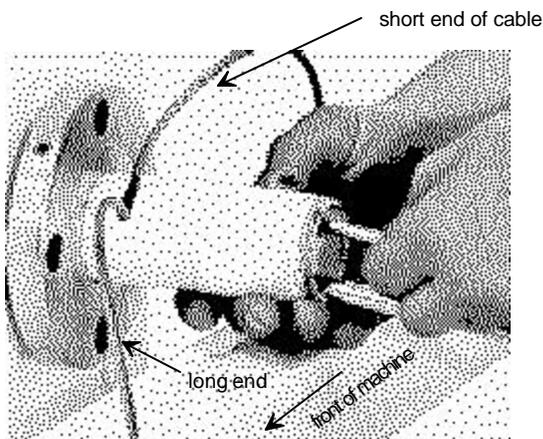
Handy-Tip: The chrome ring locks the pipe from turning when it pushed onto the stud that is welded onto the channel. This helps when installing the cables.



The *spacer-bar* is a piece of 1 1/2" square tubing with a threaded hole at each end for bolting.

- ◆ **Bolt the spacer-bar between the two channels** about one foot above the adjuster pipe.
- ◆ The x-braces go to either side of the bar.
- ◆ Use the lowest of the small holes.
- ◆ There is a bracket welded at one end of the spacer. It goes left, facing up.

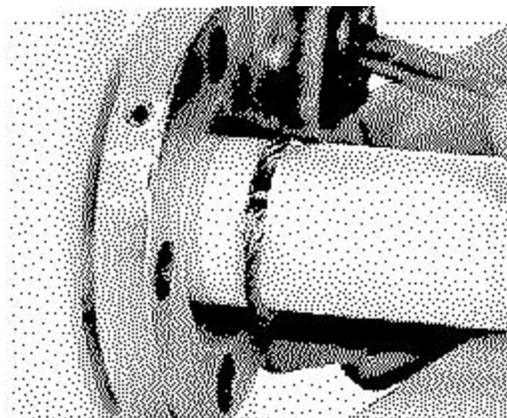
The *adjuster cables* wrap around the pipe and attach to the frame. They come packaged with a long 1/4" bolt that is used to secure them into the adjuster-pipe.



- ◆ Note that each cable has a kink. *The kink is nearer the front end of the cable.*
- ◆ **Take one cable and push the bend into the small slot** at the right end of the pipe. *The front end of the cable should be going towards the back of the machine. (After winding, the cable passes under the pipe and the front loop goes towards the front of the machine.)*
- ◆ **Push the 1/4" bolt into the end of the pipe** and through the loop of cable inside the pipe to secure the cable.

- ◆ **Pull the cable up** to remove the slack and **spread the cable** out over the ends of the slot.
- ◆ **Hammer the cable down** where it comes out of the slot to flatten it against the pipe.

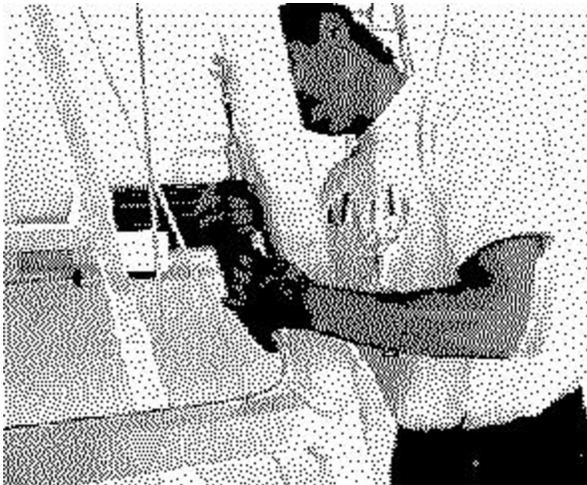
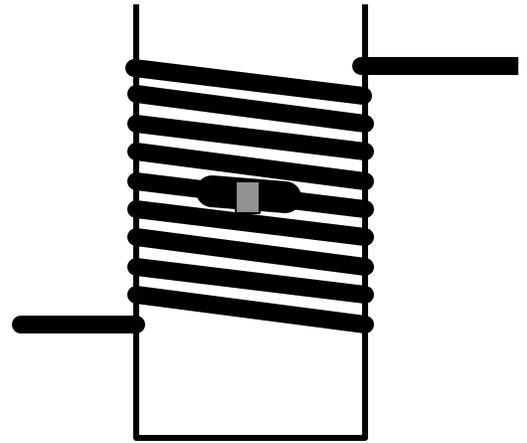
Handy-Tip: No need to whale it to death - just flatten the cables nicely around the pipe.



Use **this diagram** that shows the direction of the wind for the cables on both sides of the machine.

- ◆ **Lock the pipe** from turning with the chrome ring before winding the cables. Also, **turn out the turnbuckle** to its full extension.
- ◆ While winding, make sure that the cables form nice neat coils on the pipe.
- ◆ **Wind the short end first** and attach the loop to the holder at the front of the frame with the clevis pin and cotter pin.

Handy-Tip: Notice that the winds form a left-hand thread pattern.

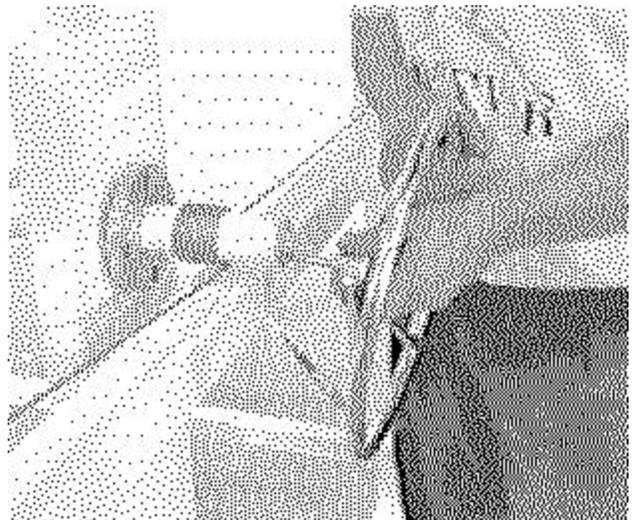


- ◆ **Hang the turnbuckle** on the upper small loop on the back of the frame.
- ◆ **Wind the long end** of the cable while keeping tension so that it will not loosen.
- ◆ The cable slips through the large loop at the back of the frame and hooks to the turnbuckle . It will be obvious when you have the right number of turns.
- ◆ **Tighten the turnbuckle** to take out as much slack as possible on each side.

Handy-Tip: Be careful not to pinch your fingers in the cables. Cable guards will be

The **large chrome wheel** screws onto the end of the pipe

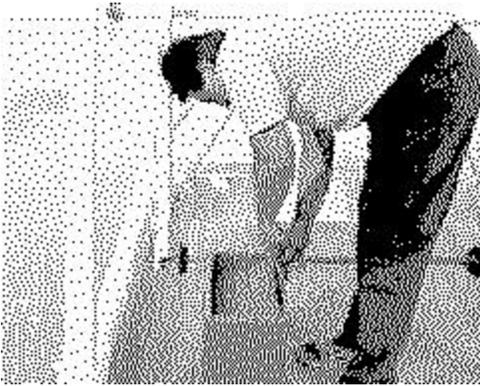
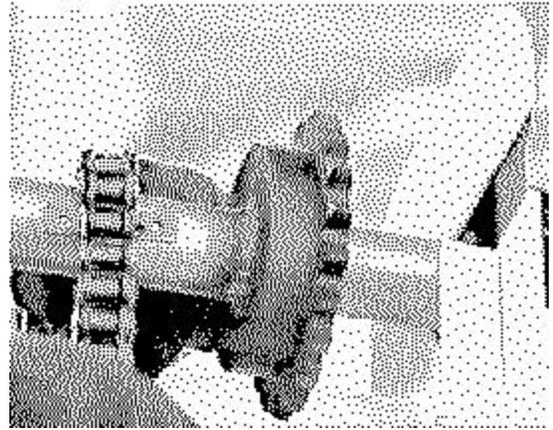
- ◆ **Push the wheel** over the threaded lock-rod and screw it onto the pipe.
- ◆ Lock the pipe with the chrome ring and **tighten the wheel hard.**
- ◆ **Screw the round plastic knob** onto the lock-rod.
- ◆ Unlock the pipe and **turn the wheel** to move the channels back and forth several times to make sure the cables are working properly. Tighten the turnbuckles one more time.



The *main chains* come in a cardboard box.

- ◆ **Place the box on edge and cut off the top.**
This way the chains can be pulled out of the box in a controlled fashion.

Handy-Tip: The chains are greasy. Wear gloves and protect the floor for the next operation.



- ◆ **Lock the shaft** with the resistance lever.
- ◆ The chains have tabs with holes for mounting the panels. When the chains are wrapped around the sprockets, the tabs must face out.
- ◆ **Lift one chain** up to the main shaft and drape it over the shaft next to one of the sprockets.
- ◆ Continue to **move the chain around** the shaft until the two ends are equal at the bottom.
- ◆ **Lift the chain** onto the sprocket.
- ◆ **Masterlink** the ends of the chain together before putting on the other chain.
- ◆ **Repeat** for the other chain.

The chains must be synchronized so that the tabs are directly across from each other. If you don't do this, the Treadwall will not work!

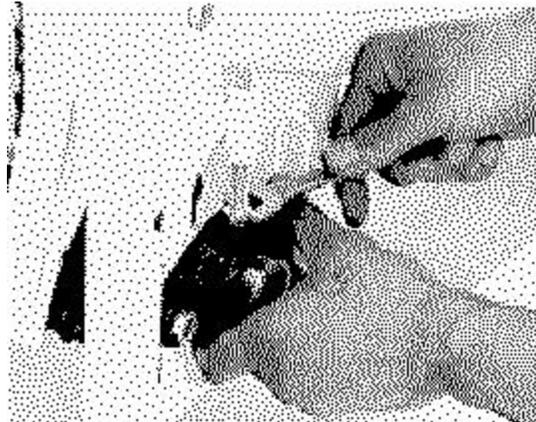
- ◆ With a tape measure, **synchronize the chains** by measuring the tabs from the top of the pulley bar.
- ◆ **Work the chains around** the sprockets until the tabs measure the same distance from the top of the pulley bar at both sprockets.



- ◆ With the chains in place and synchronized, **place them in the sprockets of the lower shaft.**
- ◆ Use the long push-bolts adjusters to **take up excess slack in the chains.**

Handy-Tip: Don't make them too tight - just take up the slack. If the chains are too tight, the Treadwall will be sluggish.

- ◆ **Tighten the bearing mounting-bolts.** Only tighten these bolts enough to flatten the lockwashers. This way, future adjustments can be made without loosening the bolts

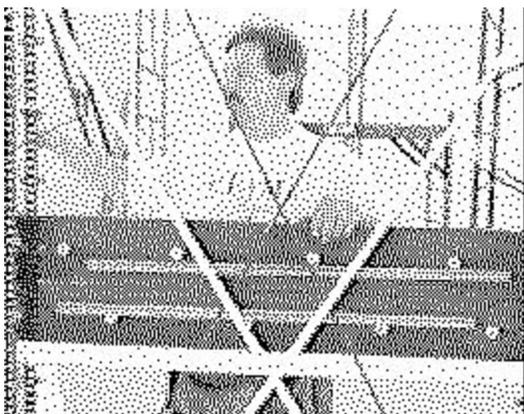


PANELS

Putting on the *panels* is admittedly a tedious job, but it goes better if you are organized. **Be careful not to drop any panels and do not lean them upright against anything** - if they fall over they will be damaged.

- ◆ You will need a 1/8" Allen wrench and a 3/8" combination wrench or a 3/8" socket wrench
- ◆ A VSR battery-operated drill with an adjustable clutch used with a 1/8" Allen bit speeds the job up considerably.

Handy-Tip: *Align the sprockets.* 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 sprockets on the two shafts.



- ◆ The panels slip 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.

Every second panel must be flipped end-for-end so that the holes alternate.

Handy-Tip: If you don't alternate the panels, the counter will not work properly. Double check each panel for orientation!

- ◆ **Use the resistance lever** to hold the panels in the right position for bolting
- ◆ As you progress, and the panels are moving up the back of the machine, it will become harder and harder to move the wall around. This is normal.
- ◆ **Bolt on the panels** until there are only five left.

Handy-Tip: Our favorite tool combination is a VSR drill and a ratchet wrench with a 3/8" socket. Also, use a carpenter's apron to hold the bolts and nuts.



Adjustment of microswitch

The Treadwall counter is activated by a simple microswitch which counts every other 6" panel, each click/count indicating 1' of distance. The microswitch is mounted inside the panels with its arm passing over every other panel stiffener bar. This arm movement (clicking sound) breaks a tiny electrical current from the counter which causes a "count".

Access to the microswitch is by removal of a panel . The wall is then rotated to expose the microswitch. See Service Bulletin No. 1 "Removal of a Panel".

If a counter is not working, check the following items:

- Examine the microswitch; is the arm bent and aligned correctly? See diagram below.
- Is the counter itself working properly? This can be checked by removing one wire from the microswitch and touching it to the other wire - the counter should register each touch.
- If the microswitch was just installed, check to ensure you have attached one wire to the terminal marked "common", with the other to either remaining terminal.

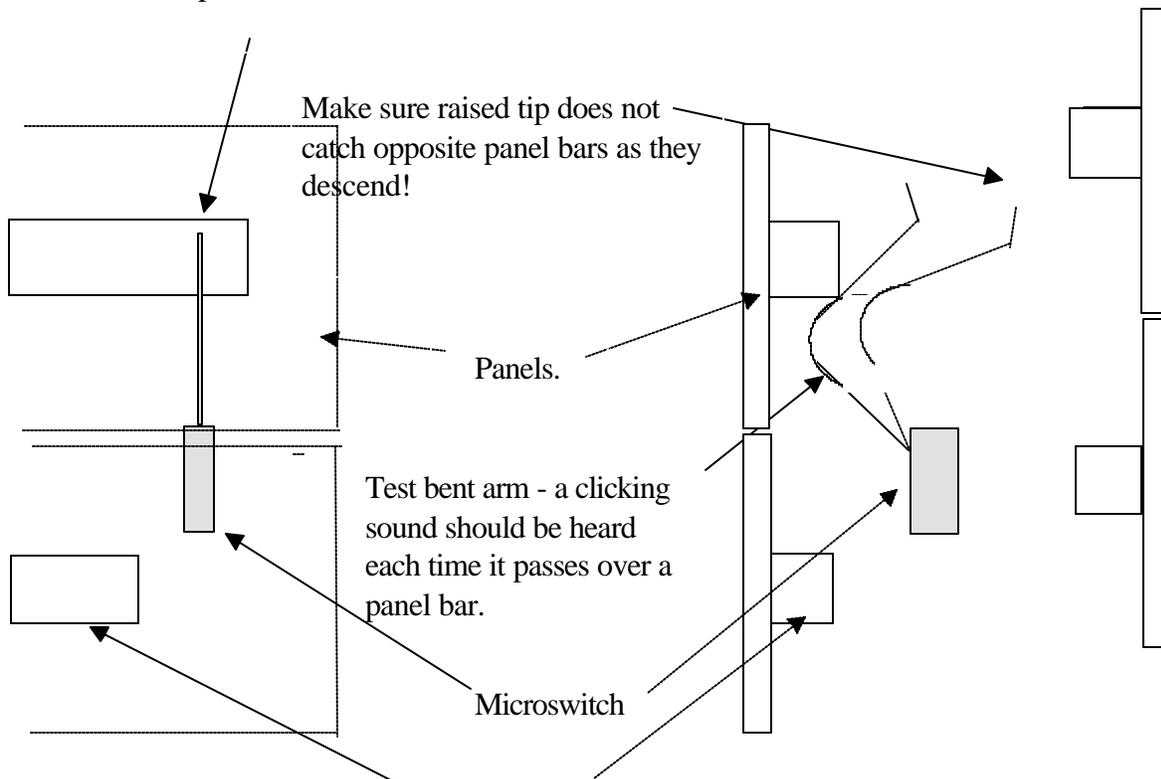
If you are installing a new microswitch, be sure to mount the switch on the correct side of the bracket so that the arm clicks over every second panel bar. Depending on the bracket supplied with your machine, the microswitch will have to be mounted on the inner or outer side of the bracket. It may only go in one position to catch every second panel.

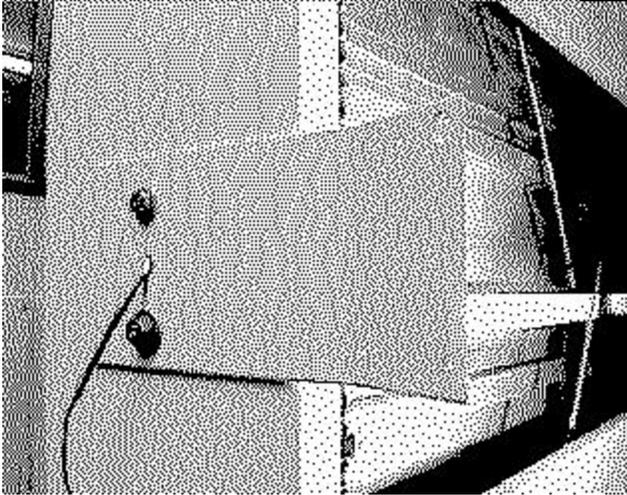
Test microswitch at all angles; there is some variation in panel position depending on angle.

IMPORTANT: Run the wall backwards at both extreme angles to make sure that the lever doesn't catch on the bars and break.

Make sure switch counts every second bar...place switch on

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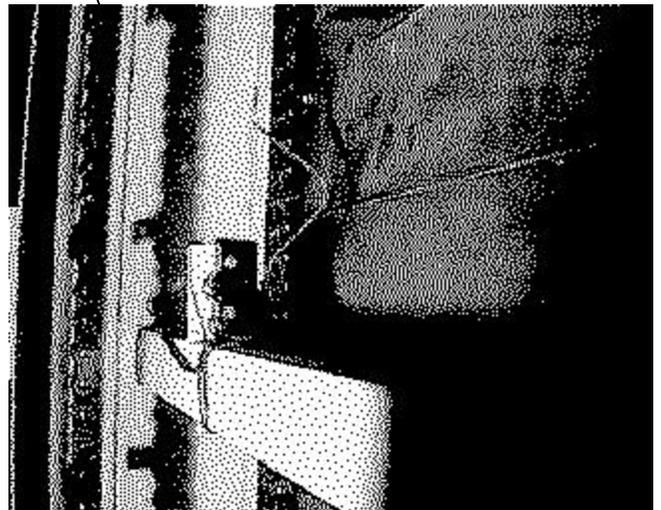
Mount the Climbometer bracket

- ◆ The *bracket* for the time-distance-calorie counter mounts onto the left channel where there are three holes in a row.
- ◆ **Mount the bracket** with the bolt through the top hole. The bottom is the same bolt that mounts the spacer bar inside the wall.

- ◆ The *spacer bar* is a square-tube bar that goes between the two channels. There is a welded-on bracket at one end.
- ◆ **Mount the spacer-bar** between the two channels. At the left end of the bar, the bolt goes through the bottom hole in the counter bracket. The right end bolt goes through the slot in the control panel and acts as a hold-down bolt.
- ◆ Make sure that the welded-on *microswitch bracket* is at the left side and faces upward.

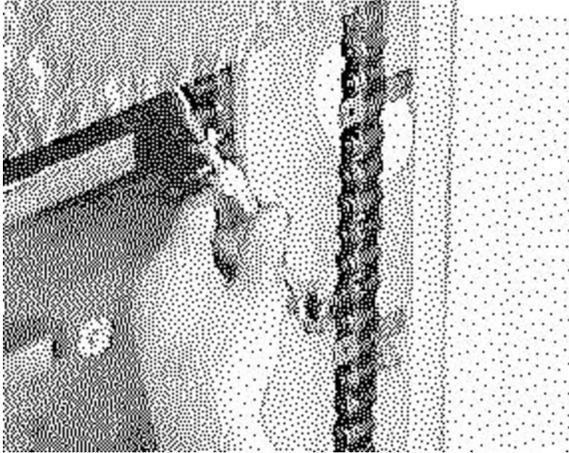
The *microswitch* is mounted on a bracket that is welded to the spacer-bar.

- ◆ **Bolt on the microswitch** with the bendable lever *pointing towards the back* of the machine.
- ◆ **Adjust the bendable arm** on the microswitch (see next page). Note that the microswitch must run properly for both forward and reverse operation of the wall.
- ◆ **Push the wires** through the center hole in the channel and **attach** them to the top and middle terminals of the microswitch.
- ◆ Use wire-ties to hold the wires to the spacer bar
- ◆ Click the switch a few times to test the counter.

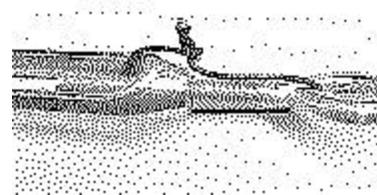
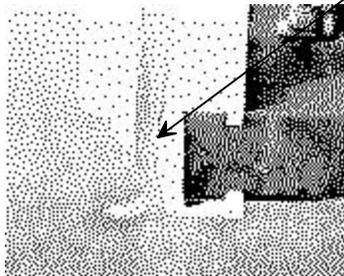


FINAL ADJUSTMENTS

When all but three panels are installed, **make the following final adjustments**

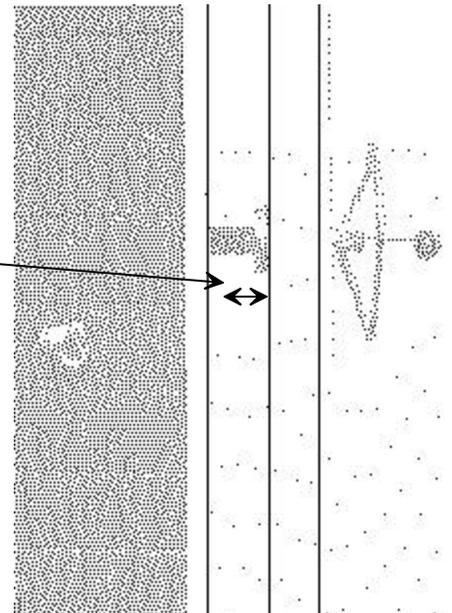


- ◆ **Adjust the channel interior x-bracing** so that there is an equal space between the channels and the ends of the panels at each side of the machine. **Moderately tighten** these turnbuckles (finger tight - no more) and tighten down their locknuts firmly. Wire the turnbuckles closed for extra security.



- ◆ The main frames must be aligned with the frame x-bracing in the back. Measure the distance between the frame cross-brace below the chrome wheel 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". To increase the gap, loosen the right turnbuckle and tighten the left. To reduce it, loosen left and tighten right.

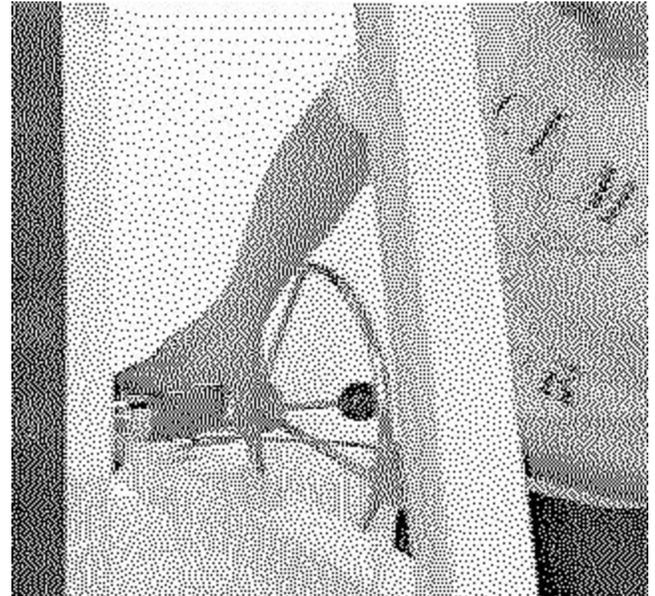
Handy-Tip: If this alignment is off, it may be difficult to lock the chrome ring on the adjuster pipe to the channel - the spacing will be wrong.



The *cable-guards* are short channel-shaped pieces with two long hooks that hold them onto the cables.

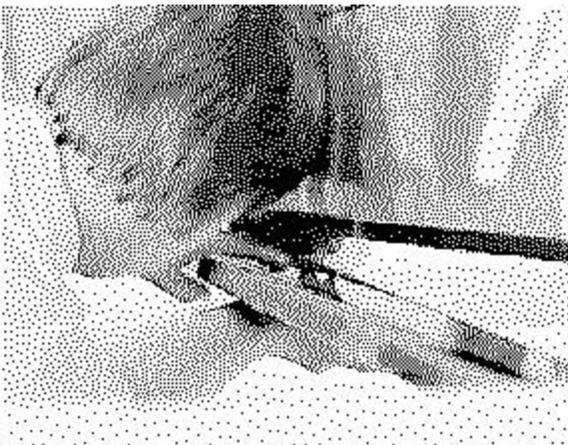
- ◆ To install the cable guard, loosen the cable turnbuckle a few turns, and while holding the cable coils from unwinding, take off the front shackle.
- ◆ The cable guard will sit over the coils. Hook one of the hooks over the rear part of the cable and slide the guard over the coils.
- ◆ Still holding the coils from the bottom, work the front part of the cable under the other hook and re-attach the shackle to the frame.
- ◆ Check that the coils are still even and re-tighten the turnbuckle.
- ◆ When both guards are installed, run the wall back and forth a few times to see that it works smoothly, and tighten the turnbuckles once more.

Handy-Tip: The cables will stretch. Check them every day for the first two weeks. Every month after that. Keep them tight!

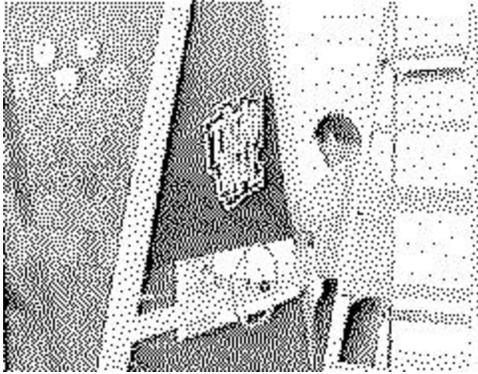


The last three panels are installed by slipping them in from the bottom.

REMEMBER to complete the Alignment Manual before closing the last panel !!



- ◆ Run the panels around until the gap is at the bottom front.
- ◆ Slip in the panels 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.
- ◆ The last panel is somewhat awkward - be patient. Put the bolts and nuts in with the panel at the bottom.



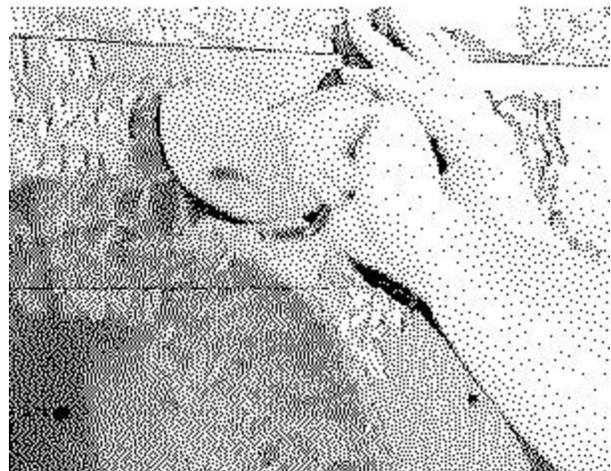
The fabric *side covers* fit into hooks on the frames.

- ◆ The small upper cover goes inside on the right. The brake lever and weight are in-between the two upper covers.

- ◆ **Bolt the holds** firmly onto the panels.
- ◆ Use about one hold per panel and distribute them fairly evenly across the width of the machine.

Handy-Tip: Distribute the colors fairly evenly too - that way climbers can use the colors to make different routes.

- ◆ **Very important - don't allow the larger holds to overlap onto the next panel.**
- ◆ Each hold has a positive edge. Generally speaking, these positive edges should face up so that the climb will not be too intimidating.



- ◆ **Attach the harness line to the ring** on the control line at the middle of the pulley-bar.

Handy-Tip: To adjust the control line, the climber stands in front of the machine and pulls the line through the line-locks until all the slack is taken up. The excess line is stuffed into the pocket on the harness.

◆

- ◆ **Attach the two post pads** under the cables on either side of the machine.
- ◆ **Use cable ties** - position them under the frame member.



- ◆ **Place the mat** between the frames.

Make sure the Alignment Manual and installation registration is completed and mailed to Brewer's Ledge in the enclosed envelope. This is very important.

Cleaning up the machine completes the Treadwall installation.

Handy-Tip: Congratulations!