

# **INSTRUCTIONS FOR SETTING UP A PENTAYOME OR HEXAYOME**

## **Tools Required**

Two 9/16" box wrenches

5/16" wrench or socket

Screw drill and 3/32" drill bit

Ladder

Lightweight Gloves (Optional)

## **Identifying the Support Poles**

First, notice that some of the poles are longer than the rest. These are the "roof support poles". On PentaYome the roof rafter poles will only be slightly longer than the rest

Next, notice that some of the poles have eyebolts that are bent on one end and straight on the other end. These are the "side support poles".

The remaining poles have a bent eyebolt on both ends. These are the "base plate poles" and the "top plate poles".

All the support poles have a right-hand threaded eyebolt on one end and a left-hand threaded eyebolt on the other end. This way once the poles are attached if they are twisted they will either expand or contract allowing their length to be adjusted.

## **Identifying the Canvas Coverings**

Two canvas coverings come with your Yome. The one that is light colored is the "side cover" of the Yome. This canvas covers the walls of the Yome. The top of the side cover has the bungee-elastic loops with "S" hooks sewn into the inside of its edge. The remaining canvas is the "roof cover" because it covers the Yome's roof. The side that has the velcro flaps with grommets sewn onto it is the inside of the roof cover.

# Identifying the Hardware

## **Eyebolts**

This manual will often refer to the "eyebolts" that are installed in the ends of all the poles in the kit. It is important to be familiar with what these eyebolts are and how they function. The eyebolts installed in the Yome poles are basically large screws with a loop in the end. This loop is known as the "eye" of the eyebolt. The eyebolts move into and out of the poles depending on which way they are turned. The loose eyebolts that come with the Yome are used in conjunction with the "overhang poles".

## **Corner Bolts**

Look through your hardware. You'll notice a lot of bolts, nuts and washers. The framework is held together by bolting the eyebolts on the ends of the support poles together. The idea is to thread a washer onto a bolt, the bolt then goes through the eyebolts and another washer and nut are threaded on to hold it all secure. The bolts that fit through these eyebolts are called "corner bolts". The whole set of eyebolts held together by a corner bolt will be called a "corner assembly".

## **Rope**

Next, notice the several long pieces of rope. This is to lace the grommets in the side cover to the roof cover, thus holding both these coverings taut.

## **Stayput fasteners**

The oval hardware pieces with the toggles are called "stayput fasteners". These screw onto the base plate so the oval grommets on the base of the door flaps fit over the stayput fasteners allowing the door to be opened and held closed.

## **Thimble**

The "thimble" is a teardrop shaped metal item which is used to fashion an end of aircraft cable into a loop.

## **Turnbuckle**

The "turnbuckle" is a metal connector with a threaded hook coming out of each end. The thimble is used to connect the to loops on the ends of the aircraft cable and subsequently tighten the cable.

## **Wire Clips**

The "wire clips" are like tiny U-bolt assemblies that help hold the thimble in place.

## **Aircraft Cable**

The "aircraft cable" is a metal cable that supports the overhang poles.

## Overhang Poles

The metal poles with wood ends are the "overhang poles". These attach to the piece of aircraft tension cable, which is held tight with the turnbuckle, thimble and wire nuts.

## Roof Stretching Tube

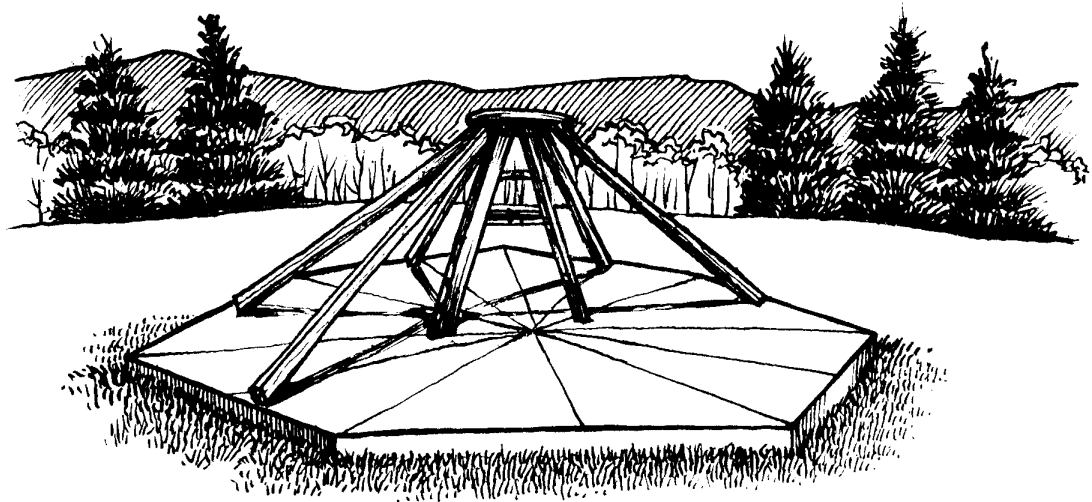
The 10" black metal tube one which on end is cut at an angle.

## How a Yome is Erected

Briefly, a Yome is erected by first building the framework for the roof on the ground. The **roof cover** is then draped over the roof frame and the **vent cover** is attached.

Next, while the roof frame is still resting on the ground, the **side support poles** are attached to the **corner bolts** of the roof frame. The roof frame with its **roof cover** are then hoisted up by lifting and swinging the **side support poles** under it. As it's being lifted, the dome assembly is stabilized by bolting the **base plate poles** to the bottom corners of the triangles formed by the **side support poles**.

At this point the wall frame is up it is ready to hang the **side cover** on. When the **side cover** is hanging loosely in place the **roof cover** stretched over the top edge of it. Finally, the base of the **side cover** is fastened to the **base plate poles** and the **roof cover** and the **side cover** are laced together. If the Yome was ordered with a door this is where the **side cover** is fastened to the **door frame**. When the **side cover** is securely fastened the Yome is complete!



## Constructing the Roof Frame

Lay the **roof support poles** out on the ground, radiating from a center point like the spokes of a wheel, spacing them equally apart. The end of the pole marked with a 'T' goes toward the center.

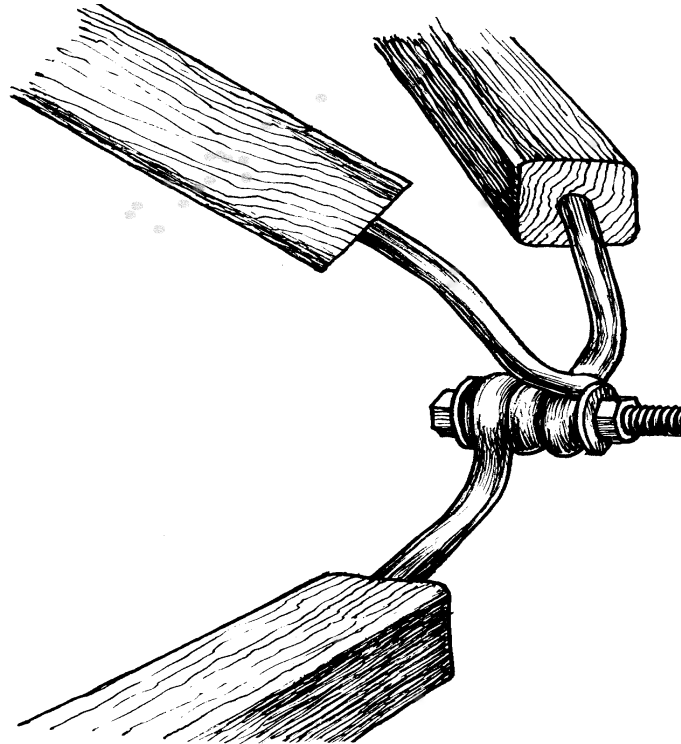
Take the threaded rod and thread a nut onto it a couple of inches up. On top of that place a washer. Holding the rod underneath the nut and washer, pick up the **roof support poles** one by one and place them on the rod so their center eyebolts are resting on the washer and nut.

Place a washer and thread a nut on to the top of the rod, to hold the center roof support eyebolts in place.

Either have someone hold the attached center of the **roof support poles** in the air (about chest height) or find something to set them on that will hold them up.

Take the **top plate poles** and set them on the ground in-between each of the **roof support poles** so that each top plate pole can connect two adjacent roof support poles. Remember that the **top plate poles** have angled eyebolts at both ends. Make sure that you have enough **top plate poles** to circle the whole roof assembly. Now we are going to fasten the **top plate poles** to the free eyebolts of the **roof support poles**. At the end of each rafter we have the eyebolts of two top plate poles next to the eyebolt at the bottom of the rafter pole. The goal here is to fasten all of the eyebolts together with a **corner bolt**. When we are finished the threaded part of the **corner bolt**

should be pointing toward the outside of the Yome and all of the bends in the eyebolts should be angled inward. To accomplish this first take a **corner bolt** in hand and place a washer on it. Now take one of the top plate pole's eyebolts and slip it onto the **corner bolt**. This should be done so that the bend in the eyebolt is bent in towards the Yome. Repeat this again with the eyebolt of the other top plate pole. Now do the same with the eyebolt on the rafter pole. Now place a washer on the threaded end of the **corner bolt**. Now twist a nut onto the **corner bolt** to hold it all together. **Note:** If you have a **snow load kit** you will use the provided threaded studs instead of the bolts for each corner.



Repeat this process at the end of each **rafter pole** until there is a ring of **top plate poles** holding all of the **roof support poles** in place.

Tighten down the nuts by holding the nut in place with a 9/16" wrench and then using a 9/16" socket wrench on the head of the bolt. Now, the **roof frame** is complete.

## Roof Cover

Drape the roof cover over the roof frame so the center grommet of the roof cover is over the threaded rod in the apex of the roof frame. Make sure the roof cover is right side out and take caution not to tear the roof cover on the protruding threaded rod.

Arrange the **roof cover** so each of the exposed grommets line up with the **corner bolts** in the frame without actually attaching them.

## Attaching the Vent Cover

Fold up one side of the roof covering so the top bolt on the roof's apex can be reached.

The vent cover will sit on top of the threaded rod. Adjust how much of a vent opening you desire by threading the rod up or down through the two nuts, keeping the rod vertical.

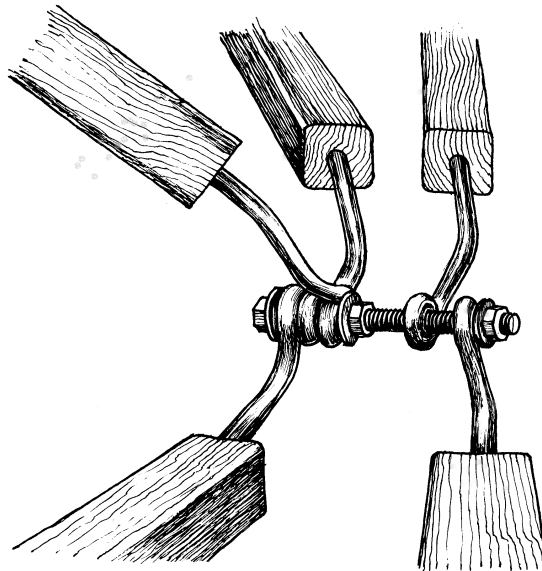
Thread a nut and washer onto the threaded rod about an inch from the top. Place the hole in the vent covers' underside onto the rod. Thread a nut on the end of the rod and tighten.

Unfold the rolled up side of the roof covering.

## Attaching the Side Support Poles to the Roof Frame

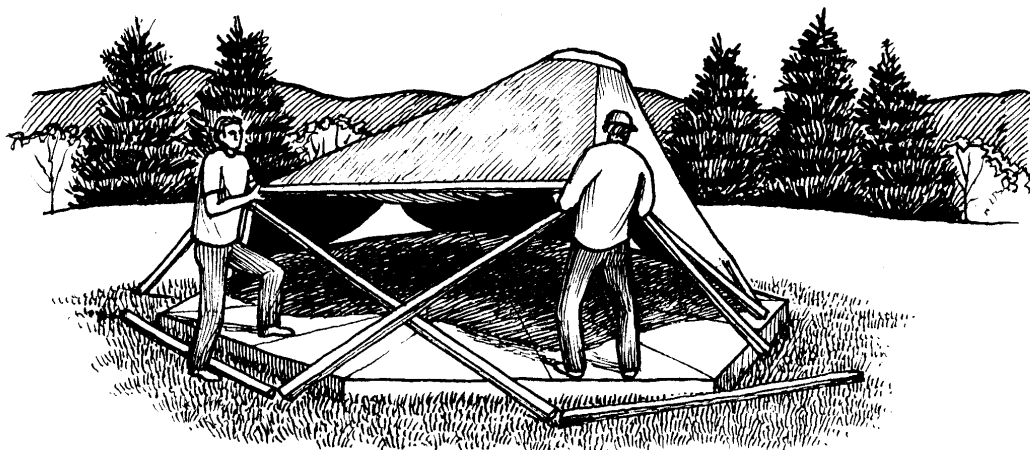
Gather the **side support pole** and place two near each corner bolt of the roof frame. So that the bent eyebolts are near the corner bolts. The bent eyebolts of the **side support poles** attach to the roof frame's corner bolts so that the bend of each eyebolt goes inward like the other eyebolts in the corner bolt assembly.

Align two side support poles so the bent eyebolts are on the roof frame's corner bolt. Make sure that each pair of side poles is arranged such that one pole is to the left of the corner bolt and one is to the right. They should lay on the ground almost parallel to the top plate poles.




Thread a washer and nut onto the corner bolt. This will hold these two side support poles in place. Don't tighten the nut; rather thread the nut only onto the very end of the bolt.



Proceed around the perimeter of the roof frame attaching a pair of side support poles to each corner, letting the poles lay next to the top plate poles criss-crossing each other.



## Lifting the Roof Assembly

Lay the base poles in a circle around the perimeter of the roof assembly so they'll be easy to grab as the roof goes up. Set them so the bend of their eyebolts faces inward and so that the middle of the base poles are close to the corner bolts. 

For this operation it helps to have three people. With two people at two adjacent corners, lift the corners up so the side support poles swing down into place. Lift until the base eyebolts of the adjoining side support poles line up with each other to form a triangle.

Have the third person bolt the eyebolts of the side support poles together with the eyebolts of the base support poles. Again grab a corner bolt and thread a washer onto it before threading through all the eyebolts from the inside to the outside. The bends of all these poles must be facing towards the inside of the Yome just like the roof frame corner assemblies. These four eyebolts can be bolted together in any order. Make sure that the threads of the eyebolt pointing toward the exterior of the Yome.  Finish each corner assembly off by threading a washer and a nut onto the bolt. 



Without a third person position the base of the side support poles so they rest against each other allowing one person to reach down and bolt the base eyebolts together.

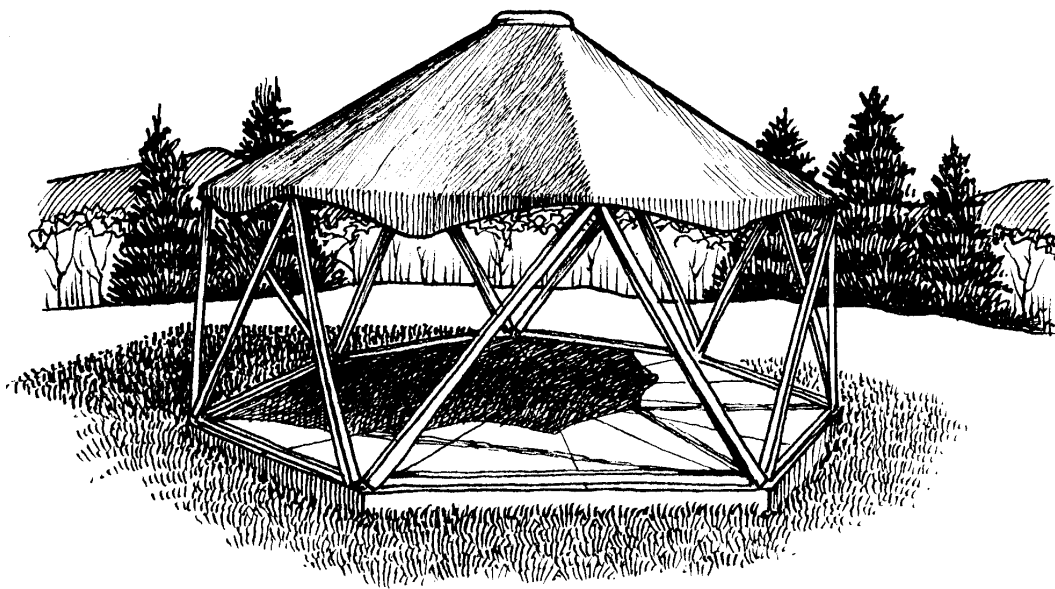
At this point you'll have part of the structure in the air and part on the ground. Lift the next corner of the roof frame so that the side support poles swing into place and fasten them to the base plate poles. If working on a tight deck, you'll have to lift from inside of the framework.

As a precaution, devise a way to temporarily secure the first base plate pole, either by screwing or staking them down. This will assure that it won't move as the rest of the assembly is raised.

Continue around the perimeter of the framework, lifting each corner and aligning the base eyebolts of each set of adjacent side support poles. Bolt them to each successive pair of base pole eyebolts. As you go around continue to loosely secure the base plate poles to your working deck.

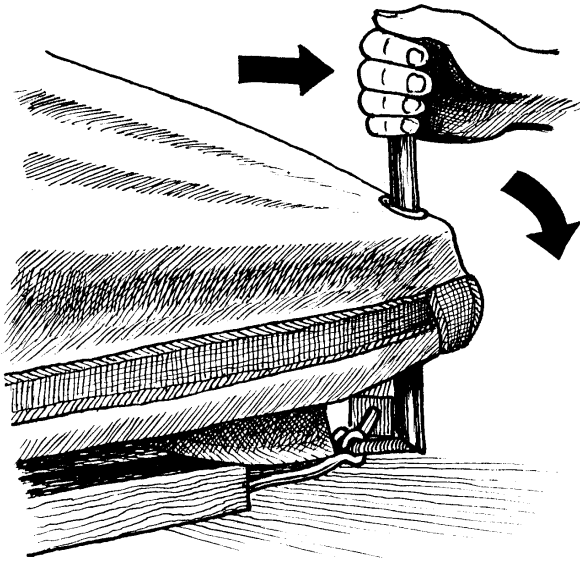
Once erected, arrange the base plate poles until they form the same shape as the top plate poles (ex. if your dome is eight sided they will form a octagon). This will require unfastening and refastening some of the base plate poles in order to move them.

Tighten all the corner bolts and base bolts.



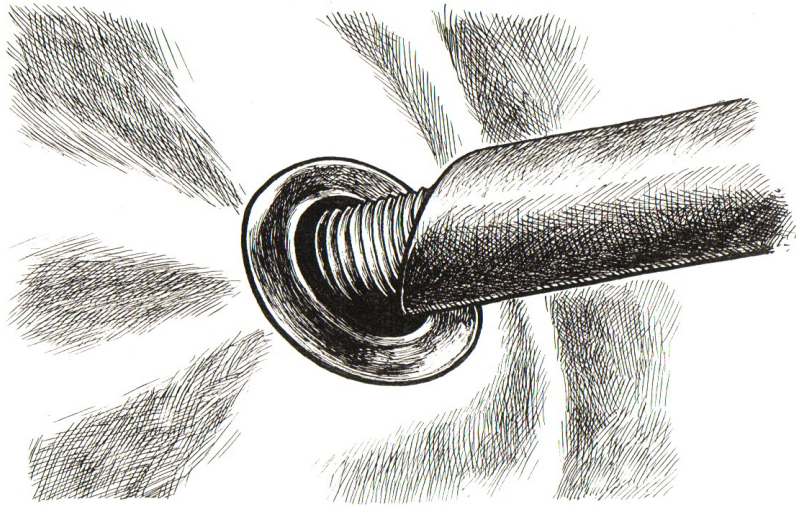



## Securing and Fitting the Roof Covering





Stretch the roof cover grommets onto the **corner bolts** using the **roof stretching tube**. Insert the tube through the grommet on the **roof cover** so it's angled end rests on the end of the **corner bolt**. Make sure the mouth of the angled end of the tube is facing up so that the tube can be used as a pry-bar. Push the grommet as far down the tube as possible and then pull back and forth on the tube, bit by bit, prying the grommet onto the **corner bolt**.

Once one grommet is on it's bolt, stretch a grommet onto the **corner bolt** directly opposite to it.



Secure the cover onto each corner bolt with a stainless steel washer and nut. Tighten snugly but do not over tighten. 

Once the roof covering is secured, it needs to be stretched to fit. The eyebolts on the ends of the roof support poles each are threaded in opposite directions. When you twist the roof support pole in one direction it will expand  and when it is twisted in the opposite direction the roof support pole will contract. 

In order to make it easier to stretch the roof covering onto the frame your roof rafters are intentionally short. Once the cover is on they will probably need to be twisted so they expand and tighten the roof fabric. On the other hand, if you are experiencing difficulty stretching one of the corner grommets onto the frame simply twist the corresponding roof rafter so it contracts.

Twist each of the roof supports expanding the eyebolts until the threads in the eyebolts start to show or the roof covering is taut. This is where the gloves can come in handy for the roof material can be abrasive on your knuckles.

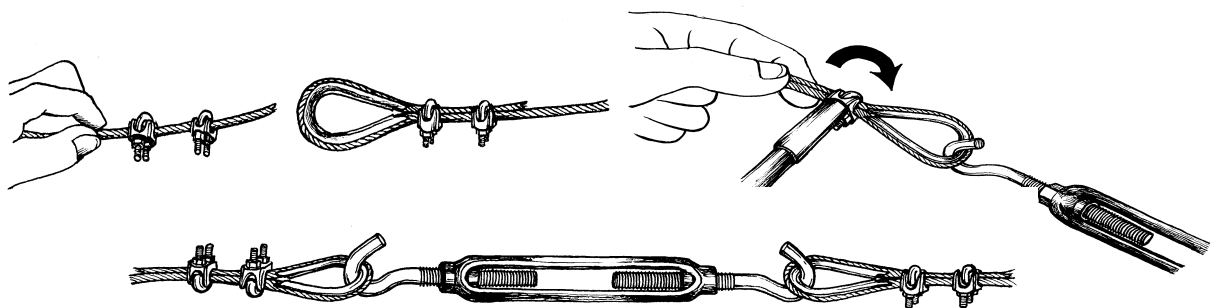
## Attaching the Cable and Overhang Poles

Standing on a ladder, thread the free end of the **aircraft cable** through the small hole located near the center of one of the roof support poles.

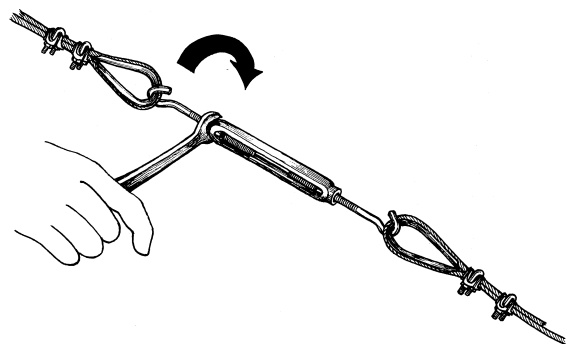
Now, thread the **aircraft cable** through a loose eyebolt and through the hole of the next roof support pole. Continue this procedure threading an eyebolt between each set of **roof support poles**.

Secure the cable with the teardrop shaped thimble and two wire clips. First, thread the two wire clips onto the cable, and then wrap the cable around the thimble and back through the wire clips.

Open the turnbuckle as far as it will open hooking it onto the two thimbles. Pull the cable on the loose thimble tight. Use the other already secured thimble assembly as an example of how to set and space the thimble and wire nuts. Tighten the wire nuts with a 5/16" wrench or socket.



Take the side of the **overhang poles** with the hole in them and thread them onto each loose eyebolt. Turn the poles clockwise until the threads in the eyebolts are no longer visible.



Slide the free end of the metal pole up over the top plate pole. Slide the eyebolt on the end of the metal pole next to where the cable goes through the roof rafter. Slide the free end of the pole into the webbing pocket in the center of the roof coverings' overhang.

Repeat this procedure for each side. Wait until all the poles are in their pockets before sliding the eyebolts to the center of the cable.

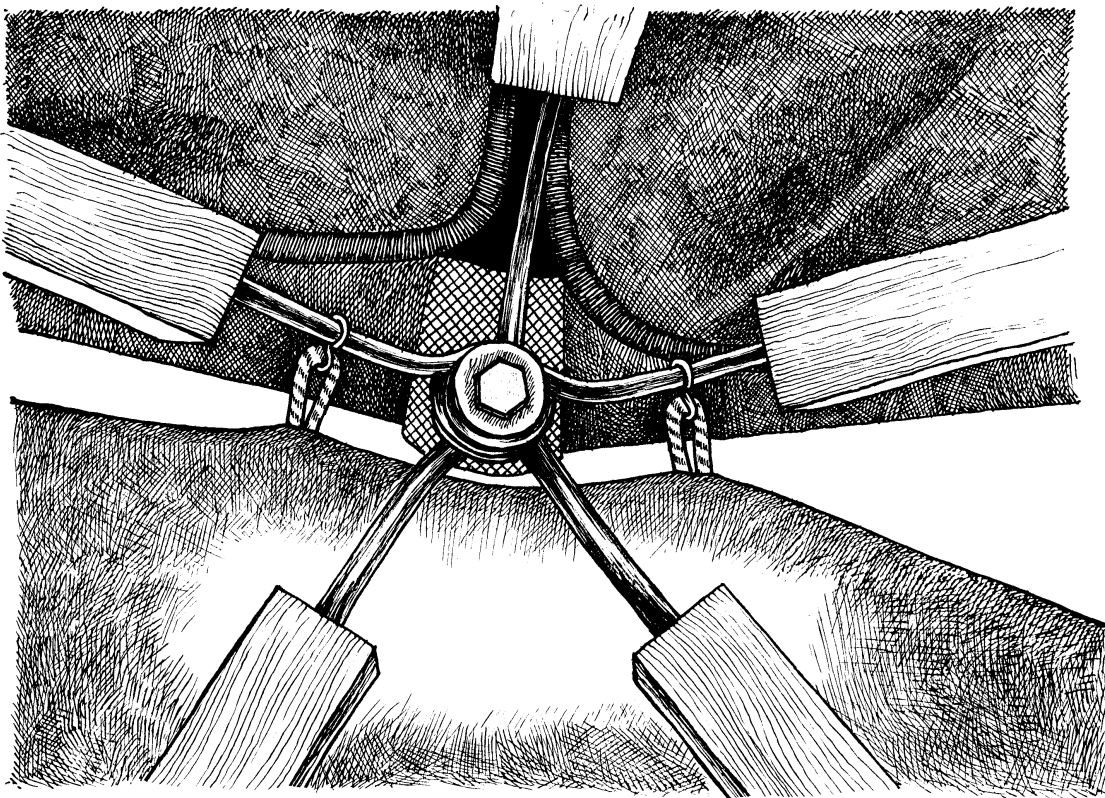
Turn the turnbuckle so it closes all the way to really tighten the cable.

## Attaching the Side Covering


You'll notice the side covering has "S" hooks, which protrude from the top of the side covering. These "S" hooks are hung on the corner eyebolt of the top plate. They hold up the side covering while it's being unrolled around the framework.


Starting on one end unroll and hang the side covering onto the frame. The corners of the roof covering can be folded up to make this easier.


Once unrolled, reposition the side covering so the windows and doors are in their desired location. Attach the two separating zippers on the opposite ends of the side covering and zip down.



## Securing the Base of the Side Covering


Each corner bolt of the base of the Yome has a large grommet in the side covering that fits over it. Secure these grommets on to their corner bolts with a stainless nut and washer on all but the door flap. 

At the base of the door awning flap in the side covering are oval grommets. These fit over the "stayput fasteners". Screw the "stayput fasteners" to the base plate so they line up with the grommets and their metal tabs pivot inside the oval grommet. Use the small wood screws provided. 

In the same manner as the roof supports, the base plate poles and side support poles can be adjusted by twisting them so they expand or contract. It is important for a proper fit that the base of the side covering doesn't have any large puckers in it (small puckers will shrink out over time). If necessary, twist the base plate poles so the perimeter of the base of the side covering is taut. 

In order to twist a base pole at this point you'll have to pick up each corner of the base pole high enough to set some sort of block under each of the adjacent base poles. Once off the platform, the base pole can be easily twisted.

The base plate poles need to be secured. Either screw them to the platform with decking screws provided or stake them to the ground. 

The remaining grommets in the side covering base are small. Screw them directly into the base plate using the stainless screws provided. You'll probably have to pre drill pilot holes first. 

If you have a door screen, screw the webbing with grommets on the screens base to the inside of the base plate poles or floor. You can also screw this webbing to the outside of the base poles, however, the stayput fasteners will then have to be attached to the top of the webbing.

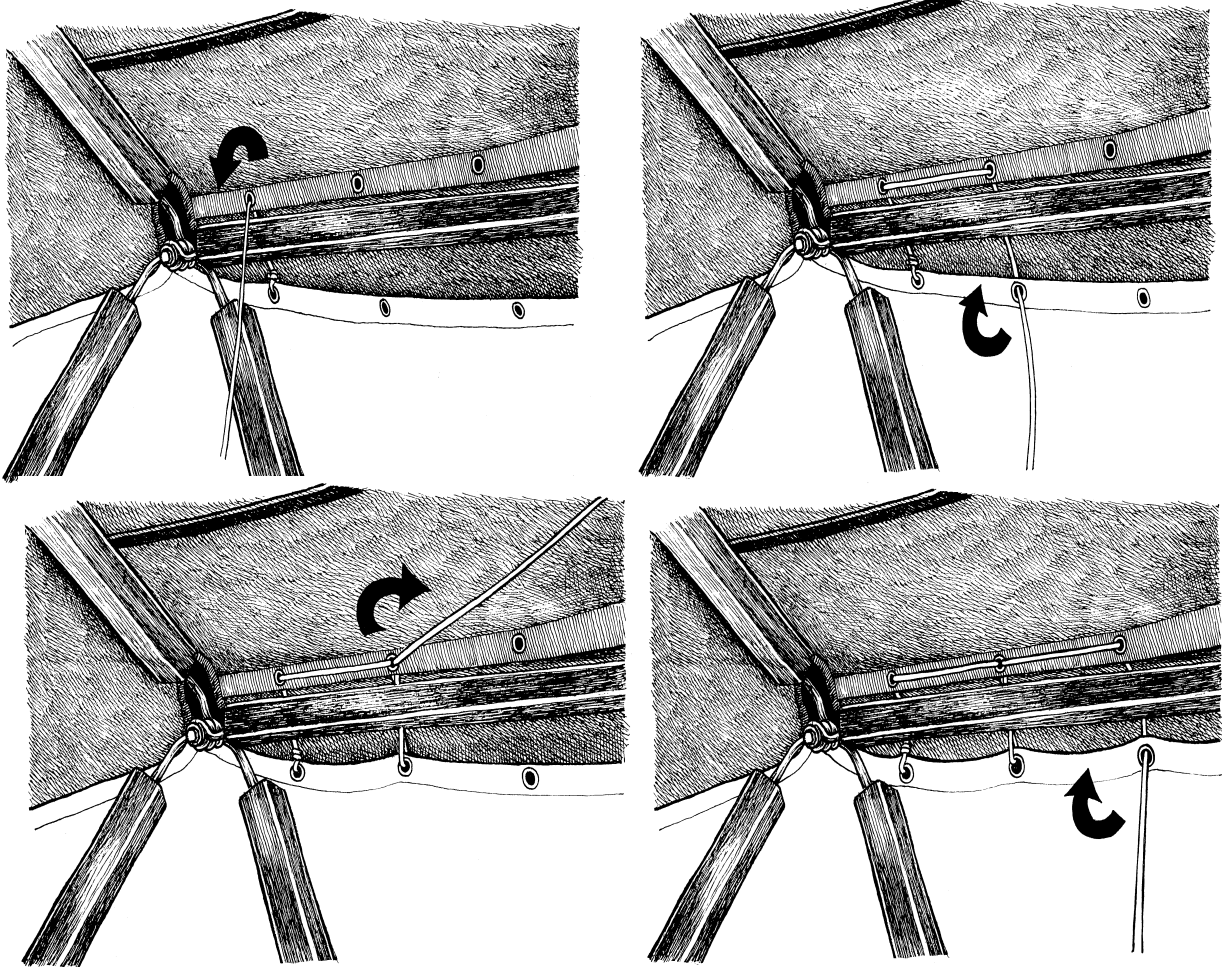


## Lacing the Roof Covering to the Side Covering

On the inside of the Yome bring the Velcro roof flap up and over the top plate pole.

Take a piece of rope and tie it to one of the end grommets on the roof webbing.

Bring the rope's other end behind the top plate pole and through the end grommet on the side covering's top. Thread the rope back through the same roof end grommet from behind. Always thread the rope behind the top plate pole.



Now thread the rope through the next grommet in the roof covering. Thread it through the grommet away from you.

Bring the rope behind the top plate pole and through the corresponding grommet in the side covering and back up through the same roof grommet this time threading it toward you.

Continue this procedure lacing the roof and sides together. As you've laced a few sets of grommets pull the rope tight.

Once you reach the grommet on the other end pull the rope at each set of grommets so it gets really tight. Tie off the end of the rope. Continue to lace up all the sides to the roof. Seal the gap between the roof covering and the side covering by pressing the Velcro strip on the flap the Velcro on the side covering.

If you experience any difficulty with the fit of the side covering, the length of the side support poles can be adjusted by twisting them as you did the other support poles. Remember the side wall canvas is designed to go through a shrinking and relaxing process.

## **Taking Down the Yome**

To take down the dome you basically do everything you did to set it up in reverse. Remove the side covering and take the roof covering grommets off the corner bolts.

Bringing the roof frame back down can be a little tricky. The important thing to remember is to loosen the nuts on all the corner bolts threads.

**Important:** One of each set of side support eyebolts will be lodged onto the corner bolt nut and will have to be freed from the nut. Make sure the side support pole eyebolts are free to pivot before bringing down the roof. You may have to tap the eyebolt with a hammer to get it free.

The roof is usually stretched so tight that it can be difficult pulling the first corner grommet in the roof covering off the corner bolt. One trick is to loosen the corner bolt from the inside until the grommet snaps off the bolt (a socket set works great if you have one). However, you don't want to turn it so far the outside nut is removed. Usually the grommet will keep the outside nut from spinning as it's being loosened. Otherwise use a 9/16" wrench to keep it from turning.

It is good to have three or more people to help bring the roof down. While two people hold the adjacent corners unbolt the three adjacent side support base eyebolts from the base plate.

Lower the two corners by swinging the side support poles out from two adjacent corners. Allow this one side of the roof to rest on the ground.

Continue unbolting the base and swinging out the loose side support poles until the entire roof rests on the ground. Take care that the side support poles end up lying on the ground roughly parallel and outside of the top plate poles as it is being lifted down so their corner bolts or eyebolts don't bend.

Then unbolt the rest of the support poles.

## **Triangle Windows**

To open, unzip both sides of the window cover flap, roll the window up and clip it in place. It is important to roll the window covers up to the inside. This will eliminate water and debris from accumulating in the rolled up window flap. Furthermore, if the cover is left rolled up for an extended time, it is a good idea to occasionally unroll it to make sure nothing funky is happening inside the roll.

The vinyl cover can be completely removed or rolled up with the cover. To roll up, first loosen the Velcro right under the buckle and push the female side of the buckle through the Velcro to the inside of the vinyl so both the vinyl and cover flap can be clipped in place. It is much easier to roll the vinyl cover up rather than trying to reposition the Velcro on the vinyl. Removing and replacing the clear vinyl covering is best done only seasonally.

You will notice that the vinyl covering will be larger than the Velcro around the window. This is because the clear vinyl will shrink over time.

## **The Yome Site**

The Yome can be built on the ground or on a flat floor system. If the Yome is to be built on the ground remember to choose a flat piece of ground. Your Yome will like this better. It is also very important to anchor the base plate poles firmly to the ground.

If the Yome is to be placed on a floor system like a wooden framed floor or a deck, there are several points to remember.

If the Yome is going to be few or more feet off of the ground it will be handy to have a ladder to perform some to the assembly steps.

If the floor system is not finished and only floor joists are exposed please lay enough pieces of plywood to safely walk on while assembling the Yome. It is much easier to lift the Yome roof assembly into place with a solid floor underneath one's feet.

## **Snow Load**

The accumulation of snow on the roof of a dome puts a lot of stress on the dome's framework from the extreme weight of the snow load. Luckily, it is quite easy to remove accumulated snow. On uninsulated roofs, simply knock the snow off the roof by poking the roof fabric with a broom handle or a blunt object. On some insulated domes you may have to shovel the snow off the roof from the outside. Yomes that are left unattended during the snowy conditions may require additional strength reinforcement. It is a good idea to devise some sort of center pole support that will help support the weight on the roof.

## Cleaning the Yome

It is important to keep your Yome clean. Especially the *Sunforger* treated side walls. Even on mildew resistant canvas, the mildew will grow on dirt that accumulates on the canvas surface.

Use the dry cleaning pad to keep your *Sunforger* walls free of light dirt and smudges. Simply rub the smudge with the pads until it disappears. The pad is used dry and never needs washing. Eraser powder sifts through the mesh covering. Even if the pad becomes soiled, dirt will not transfer back to the fabric.

Mildew in its early stages can be washed off with a mild non-detergent soap or the *Fabclean* fabric cleaner. Follow the instructions on the *Fabclean* container. Use a soft brush and scrub lightly. Harsh detergents and hard scrubbing can adversely affect the water repellency of the canvas. It is important to rinse thoroughly and immediately. Do not under any circumstance fold and store your dome canvas when it is the least bit damp.

Do not allow plants and ground cover to grow up and around the base of your dome. This is an open invitation to mildew and some shrubs contain acids that can damage the canvas. The best insurance against mildew is to set up your dome off the ground in a sunny location.

No matter how well the *Sunforger* side wall canvas is maintained some discoloration is inevitable. Just like humans, turning gray should be considered a natural part of its aging process.

## Shrinking and Relaxing

**After you set up your Yome and the *Sunforger* canvas gets wet the first few times, it will go through a period of shrinking and then relaxing. It is important that the door and window flaps are kept closed and the velcro vinyl window covers are kept closed during this period to insure everything continues to fit.**

It is important that once you start to put up the side wall canvas you completely finish the job. Side walls left hanging without being completely laced up and screwed down can shrink and never quite fit the way they were designed. Furthermore, it is best not to install the side wall in extreme rain. The canvas will shrink when wet and relax when dry.

When you first receive your Yome the fabric will be wrinkled and possibly a little dusty. This is an inevitable part of the manufacturing process (imagine wrestling large quantities of fabric through a sewing machine). After the Yome sits in the sun, shrinks and relaxes the wrinkles will soon disappear.



## **WOOD STOVES**

You can run a stovepipe through the special fiberglass patch sewn into the canvas side wall or the fiberglass hoop of a circular window. To safely use a wood stove in a Yome follow the following safety instructions:

To cut the fiberglass fireproof fabric to fit the stovepipe use a sharp pair of scissors to cut about a 2" hole. Center the hole with the center of where you want the stovepipe to exit. Draw a circle the diameter of the stovepipe and cut a few slits almost to this circle. Push the stovepipe through the slits and wire or a hose clamp to secure the resulting flaps around the insulated pipe.

It is important that you use triple wall, double wall insulated, or some suitable insulated pipe to go through the fiberglass side wall fabric. This is because the stovepipe is passing between the wooden side support poles.

After exiting the side wall put an elbow on the stovepipe. Some sort of system needs to be devised to support and brace the stovepipe stack. Cinder block or forged iron work well.

Continue to stack stove pipe on the supported elbow. Most fire codes require that the stack be 2 feet higher than any portions of the roof within 10 feet. In order for the smoke to properly draw, it is important that the stovepipe stack is high enough.

Place a rain cap on the top of the chimney stack.

### **Common sense stove tips:**

Situate the stovepipes so the prevailing winds draw the smoke away from the Yome.

Place the stove 24" away from the side wall.

Place the stove on sand, stone, tile, durorock or some type of suitable fire proof surface.

Place a sheet of durorock, stove board, or some type of heat barrier behind the stove and at least an inch away from the side wall canvas.

Clean inside of stove pipe at regular monthly intervals.

Keep stove 3 feet away from combustible surfaces.

Use insulated pipe that is rated to be 2 inches from a combustible surface to exit through the side wall.

Invest in a fire extinguisher.

Be aware, fire is an ever-present danger whenever wood stoves are used.