

Pinning

By



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General Pinning Information

There are several methods to “pinning” a log home. Each one is dependant on the log home manufacturer, engineering requirements and type of structure. Some pinning allows the logs to “move” in a natural way, while other pinning prevents settling.

Pinning can use a variety of different types of pins. Wooden dowels, lag bolts, spikes, log screws, etc. Each type of pin has a specific purpose and should be used according to the end result required.

In this pamphlet we discuss the different methods of pinning and their uses. We also cover typical accepted pinning methods. It is recommended that all pinning is done to the specifications of the log home provider unless otherwise specified differently by a licensed engineer.

So what is pinning anyway? Pinning is using any method of securing the logs to prevent horizontal drifting. It can also be use to prevent vertical lift or settling. Each different type of pin has a different purpose.

Log walls, by nature, breathe. By this we mean they adjust with the weather and humidity. In drier climates logs tend to shrink due to moisture loss. In wetter climates they expand due to moisture absorption. In some environments, due to dry and wet seasons, both shrinking and expanding can occur. Generally, after a period of time, the logs will “level out” to the relative humidity of their environment and quit moving. Pinning helps keep the logs in place.

Types of Pins

Here are some common pin types:

1. Seasoned wood dowels
2. Spikes
3. Lag bolts
4. Log screws
5. Rebar
6. All-thread

Again, we can not state this enough, each manufacturer will have their own preferred method of pinning which should be followed, unless otherwise specified by an engineer.

Wooden Dowels

Wooden dowels (typically seasoned hardwood dowels) are used primarily to prevent the logs from moving in or out. They can range in size, but for now, we will use a 1" dowel as an example.

With a 1" wooden dowel a hole is drilled entirely through one log and generally half way into the next log down. The dowel is then driven into the hole using a mallet. Typically the hole drilled is just slightly larger than the dowel itself. This prevents the dowel from mushrooming as it is driven into the hole. It should be a snug fit. Not too loose to prevent it from holding and not too tight to prevent it from being driven all the way in.

On a chink style home the dowel does not need to be completely flush to the top of the log as the dowel can be concealed within the chink joint.

Spikes

Spikes are just what they seem. They are large nails. Spikes also prevent horizontal drifting of the log walls while allowing the log wall to settle as needed. Spiking, like dowelling, is a traditional method of securing the logs.

The biggest drawbacks in using spikes are the fact that they are very tiring to drive in and you run the risk of damaging your logs if you miss the spike.

Typical installation of spikes requires a hole the diameter of the spike to be drilled through the first log. The spike is then driven into the hole and half way into the log below using a sledge hammer. Spikes generally range in length from 18"-24". Again, this can be very time consuming and tiring.

Lag Bolts

There are typically two different types of lag bolts used: smooth shank lags and fully threaded. Smooth shank lags are only threaded at the bottom 1/3 or so. Fully threaded lags, as the name indicates, are threaded from top to bottom. Each bolt serves a different purpose.

Smooth shank lags allow for the lag to bite into the lower log while not affixing to the upper log. It does keep the two logs pulled together, but allows for some settling to occur.

A fully threaded lag holds the two logs in place, one to the other. It binds the two logs to their locations to each other. This may prevent settling, or if not installed correctly may prevent even settling.

It is important to know which type of lag to use for the correct application. Refer to your log package provider for their specifications.

Lag bolts are typically installed into predrilled holes. It is important to use the appropriate size washers with lags. Washer and bolt heads are typically counter sunk.

Log Screws

Log screws are self tapping screws which can be quickly installed into wall logs using an electric drill. Predrilling holes is not necessary. Like lags, there are a variety of sizes, styles and manufacturers. Log screws also go by many names such as log hogs, oly log screws, etc.

By appearance log screws may not seem as strong as lags or spikes. They are, in fact, generally as strong, and in some cases, stronger. They are generally heat treated for superior strength. They also are handy for being able to be removed if they are found to be in the way. Like a regular screw, you can reverse your drill and take them back out.

The threaded shaft is wider than the shank so they hold the logs together tightly. Like lags, they are available with a smooth shank or fully threaded depending on application needs.

Rebar (or drift pins)

Many times rebar is used as drift pins. Drift pins can also be made of galvanized pipe. Rebar is generally used to prevent horizontal movement but does not pull the logs together tight. With drift pins you are relying solely on the logs themselves to stabilize the height.

All-thread (a.k.a. threaded rod)

All-thread can be used the full height of a wall log stack. It is generally used to help prevent log settling with nuts, washers and even springs. There is generally more maintenance that is required by the homeowner in adjusting the all-thread after the home is stacked.

All-thread also presents a unique difficulty that none of the other pinning options present. This is drilling holes vertically from one log to the next in several stages that all line up perfectly through the entire wall stack. Whether the all-thread is placed first and the logs are then lowered by crane onto them, or the all-thread is placed into predrilled holes after the walls are stacked, getting the holes lined up perfectly is extremely difficult.

All-thread is generally much more labor intensive as well.

Pinning Locations

Pinning locations will vary based on type of pinning used, manufacturing specifications and engineering.

Generally pinning is recommended at the following locations:

1. Corner notches
2. Near openings
3. In some cases, at specified point loads
4. Along the length of log walls.

In the last case, pinning is usually staggered at a predetermined spacing interval. The spacing should be designated by the log home manufacturer or by a licensed engineer.

Other Notes

Pinning is an important aspect of a log home. It should not be self determined. It should be something that you heed the advice of other professionals on to determine. There are several schools of thought about what type of pinning is better than others. Bottom line, your log home provider's specifications are based on their experience with their product. It is advisable to use what they recommend unless your structural engineer specifies otherwise.