



# HOW TO SERVICE A THATCHED ROOF



## **THATCH ROOF SERVICING AND MAINTENANCE**

The Thatchers Association of South Africa, strongly recommends that only experienced thatch contractors be appointed to install and service thatch roofs. The Pull & Combing process must be well supervised, since inexperienced or uninformed thatchers could take shortcuts that could ultimately destroy the roof.

The Insurance companies request that maintenance must and should be done regularly on a thatch roof. The question arises as to what is expected that should be done to maintain the roof. There has always been a controversy about the brushing and combing method. As there are two types of thatch roofs, namely Cape reed and thatching grass.

Is there a golden rule that applies, and at what intervals should this maintenance happen? Presently many of the methods used actually reduces the lifespan of the roof. With proper maintenance at required intervals, a well-constructed thatch roof should have a long lifespan.

Apart from keeping the surface of the thatch clear of creepers and other vegetation, maintenance has to be done on the thatch itself. Deterioration is usually evident from the untidy appearance of the covering. Inspections of the roof, in particular of areas such as valleys, the areas under trees, and areas with slopes of less than 45°, should be carried out regularly to determine the condition of the thatch layer. In general, the rate of loss in thickness may be assumed to be in the order of 20 mm to 25 mm in cover over seven to nine years.

For a 175 mm-thick thatch layer, the thatching twine will generally be located in the middle of the layer (about 80-100 mm below the top surface) as the twine could eventually become exposed after 20 years or so. The lifespan of the thatch will be prolonged by regular inspections which will indicate when a Pull & Comb is required, with a thatching spade (leggatt).

One needs to understand the technical detail of a thatch roof before you merely allow an unqualified thatcher comb a roof. Every combing process, unless properly done, reduces the cover over the sway, in other words the functional thickness of a roof and thus lifespan.

The very first course of action to take is to inspect the general length of the thatch or reed. If found to be long enough, the thatch layers can be pulled down. This aspect of a thatch roof is critical, because the length of the stem below the twine actually has a direct bearing on the lifespan of the roof.

If the twine is first pulled tight and the thatch is then pulled out on top of the roof, the lines are loose again.

The correct method is: After the roof has been serviced, the lines must be pulled tight and at the same time the bottom edge of the spreid layer that has fallen down, must be pushed up again to behind the batten.

### **THE CORRECT METHOD OF SERVICING A THATCHED ROOF**

All thatch roofs have a lifespan. No matter how well it is maintained, no matter how well it is thatched and to what thickness it is thatched at, all thatch roofs will eventually get to the point of no return and will need to be re-thatched. A maintenance plan in place and the choice of thatch when the roof is originally built, can prolong the lifespan of a roof.

#### **Cape Reed** (*Thamnochortus insignis*)

Cape Reed is a heavy thatch with a strong core. Now here's the logic...Cape Reed grows in a varying climate with wet, cold winters with rainfall and hot dry summers. It is therefore not highly suited to areas which have hot humid summers and dry winters.

## **Thatch Grass** (Hyparrhenia hirta or Hyperphilia dissoluta)

Hyparrhenia is a light weight thatch with a hollow core which grows in areas which are quite tropical with summer rainfall and high humidity. This thatch is therefore logically more suited for summer rainfall areas.

General degradation of the thatch happens over time and common problems in thatched roofs which require maintenance include damage caused by monkeys, birds and overhanging trees as well as leaks and rotting often caused because the roof was improperly thatched and built in the first place.

## **BRUSHING A THATCHED ROOF**

This is the most regular maintenance a thatched roof usually requires. The top layer of thatch on any thatched roof rots over time. This layer of rotten thatch needs to be brushed off every 5-8 years to ensure no deeper rotting and thatch degeneration. When a thatched roof is originally built the thickness of the thatch should always allow for this maintenance. After years of brushing, a thatched roof will reach a minimum thickness and wires will be exposed - this indicates that no more brushing maintenance can be done and it is time to re-thatch.

### **What is Brushing?**

Brushing (or combing) when used in the context of thatching, is the process of removing the top-most layer of thatch from the entire area of a roof. The ends of the thatch, the outer layer of the roof, slowly rot as they are exposed to the elements. This thin layer of rotten thatch is removed during brushing.



Looking at the photo above one can see top left part of the roof already serviced, the middle part still needing to be serviced and the bottom area with layers pulled back.



Photo clearly showing how the thatch is raised after servicing.

### **Why does a Thatch Roof need to be Brushed?**

It is highly important to brush a thatch roof several times during its lifespan, to prolong the life of the roof. The thin, rotten, outer layer of thatch holds moisture. This moisture, if left to age will gradually penetrate deeper and deeper into the roof and increase the amount of moisture in the thatch. As a result of this moisture held in the roof, the thatch will eventually turn to compost. Brushing removes this outer layer allowing the deeper thatch to dry out, once this outer thatch has reached an age, it will be removed. This cycle continues throughout the life of a thatched roof. Because if this cycle it is important not to remove too much thatch when brushing as this will make the thatch thinner more quickly and shorten the lifespan of the roof. Generally a roof should have 3-4 brushings "in it" i.e., it should be thick enough to allow 3-4 separate occasions of brushing over the years before it needs to be re-thatched.

### **When should a thatch roof be brushed?**

As a general guide most thatched roofs need brushing ever 8 or so years. However, it depends highly on the choice of thatch, the pitch of the roof, the local climate and the quality of the thatch. Some roofs can go for 15+ years without being brushed, others will need brushing after only 5 years. It is important to speak to an thatching specialist who can give you an accurate assessment of the state of the thatch and the roof as a whole, before work is undertaken.

When a fire retardant is applied to a thatch roof, the manufacturers require that it be reapplied every seven years. This means that before re-application the thatch roof must first be serviced to have a clean layer for the chemical application.

#### Caution: Cape Reed Roof

Brushing and Combing of a Cape Reed roof destroys the roof.

The important thing is that the rotten ends must be cut.

**One** of the ways to service a Cape Reed roof is to use a hedge cutting machine which can cut off the outer layer of thatch without sections having to be pulled out of the roof - this means much less disturbance of the roof itself. The thatch is still then brushed and pushed into place to compact the thatch.



### **ROOF COMPACTION AND FINISHING THE JOB**

The compaction of a thatch roof is one of the most important contributing factors to prolonging the roofs lifespan. If the thatch is loose and not tightly packed it encourages moisture to be retained more deeply in the roof as well as increasing the probability of weather damage, and making animal and bird damage much more easy. The thatch must form a solid roof to be effective.

It is important that whichever method is used to brush the roof, the roof is compacted afterwards. This is done by pulling and tensioning the twines from the inside of the roof. In some cases this is not possible - unfortunately many contractors use twines with a shorter lifespan than the thatch itself and when they are pulled to re-tension, they break.

It is important to check what type of fasteners/ twines a contractor is using. Only tarr treated sisal twine is allowed accding to SANS 10407 (Thatched Roof Construction) specification requirements or galvanised/stainless steel wire.

**NOTE:** If the product packaging does not say it is tarred sisal twine, it is not the real thing. Products such as Jute (labelled as 'tarred twine') and ***polypropylene (labelled as 'thatch twine') are not suitable for the application, neither supported by the Thatching Association of South Africa nor the SABS.***



Both Jute and the polypropylene twines' breaking strength is approximately 20 kg, a third of the breaking strength of tarred sisal twine and hence do not offer the long-term lifespan expected of a thatched roof.

If the roof has poor compaction and has been brushed, it is possible to add bundles of thatch as the roof is being brushed to achieve a higher density of thatch on the roof.

The thickness should be at least 175 mm for normal thin thatching grass and should be well compacted. However, the thatch thickness should not be more than 250 mm, which may result from over-thatching which may impact on the stability of the existing roof structure. Over-thatching in thin layers is not recommended as it will impact on the life expectancy of the newly thatch cover.

### **Thatched Roof Valleys & Drainage Systems**

A common maintenance problem in thatched roofs is lack of drainage which leads to premature rotting and leaks. Often these problem areas appear where thatch meets from several directions (in a corner for example) or if there is an overhang (one thatched roof above another). In some cases no allowance for drainage was made in the original build or the thatched roof valleys were not fitted adequately.

#### **Flashings**

Flashings must be installed against the wall to prevent waterproofing problems.



*Wrong: No flashing against the wall*

### **Re-Thatching & Patching**

In some cases when carrying out maintenance on a thatched roof extra thatch needs to be added to patch thin spots. In extreme cases or on an old and thin roof, brushing and patching is not enough and the roof must be re-thatched. Reliable thatching contractors will not provide a guarantee for the maintenance if it has been recommended that the roof be re-thatched rather than patched.

A second layer cannot be placed on a roof thatched with Cape Reed.



### **Thatched Roof Capping**

The capping (or ridging) on a thatched roof can be a problem area. Sometimes the concrete mixture is not made to the correct specifications originally and the capping can crack and cause endless maintenance problems. Over time or due to bird and animal damage, thatch may become loose around the top capping area.

The different methods of ridging are described in "A Guide to Thatch Construction in South Africa" on pages 60 to 63

### **Remedial Work on Pole Structures**

Unfortunately some structures are built without plans or an engineer's design, and with inadequate pole structures or fixings. If the pole structure is failing it could be for the following reasons:

- The structure has been built with poles that are too thin
- The builder has not used enough poles to support the weight of the structure
- The poles are either not preservative treated
- or the incorrect application and/or H class was used
- The poles are not secured with the correct fixings so the structure is unstable



By using extra bracing the pole structure can be fixed but in more extreme cases the entire structure has to be re-built.

## Re-Thatching

Sometimes the best way to repair a roof, is to re-thatch it. That is if all of the thatch is stripped from the roof. Then the pole structure, to make sure that it is solid, can also be assessed.

## FIVE COMMON PROBLEMS WITH THATCHED ROOFS

We have picked out five of the most common problems which cause a thatch roof to leak and outlined the best way to solve them. If you're having problems and your thatch roof is leaking, read on!

### PROBLEM 1: Leaking Capping

**Symptoms:** The capping (or ridging) is the section right at the top of the thatch roof. Sometimes a leak will come directly from the top of the roof and other times the water will trickle down the internal poles and make it seem as though the leak is from elsewhere on the roof - for this reason it is sometimes difficult to tell whether the leak is coming from the capping.

**The Problem:** Traditionally the capping is made out of a mix of cement, sand and crusher dust which forms a rigid capping. Because of the long, thin shape and expanse of the capping and the nature of the cement mix, cracking is almost guaranteed if expansion joints have not been fitted. Some thatchers fit a thin layer of plastic under the capping before the cement is laid although often this layer is punctured during the laying process and the plastic is therefore ineffective.

### Cracked Capping

**Solution:** Once the capping is laid it can be covered with a membrane and water-proofing solution. This layer water-proofs the capping and allows movement and flexibility as the cement base ages. The membrane and solution must be fitted according to the manufacture's specifications to be effective.



This solution can be costly (and certainly costs more than fitting a cement capping alone) but over time it is the most effective solution to capping problems as you will not have to call out a thatcher to repair the capping every year or so.



## **PROBLEM 2. Leaking Valleys**

**Symptoms:** The thatch roof is leaking where two sections of roof meet from different angles (the valley section).

**The Problem:** Generally valley sections, even if not fitted correctly, are fine when the roof is first thatched. After a few years of rain and damp conditions however, problems start to arise. Valley sections bear the brunt of the water drainage for thatch roofs and experience a large amount of water flowing down them when it rains. They take longer to dry out than other sections of roof because of their angle and thickness and they therefore rot more quickly allowing leaks to form.

**Solution:** A proper valley liner needs to be fitted to help the water drain from the roof quickly and prevent the thatch in that area from holding water and retaining damp. These valley liners can be fitted to existing roofs, the process involves stripping that small section of valley and fitting the valley liner with thatch around it.



Additional material must be laid in the valley to provide extra thickness to prevent water penetration into the thatch layer and to provide a gradual sweep, rather than a sharp bend.

Valleys may be fitted with valley liners (Galvanized or Aluminium in coastal areas) stitched with double strand sisal tar twine maximum stitch width to be 10 cm.

## **Leaking or wind damaged Corners**

**Symptoms:** The thatch roof is leaking at the corner or the thatch has been "lifted" by the wind and is falling out.

**The Problem:** Corners are commonly a problem for inexperienced thatchers as they are a difficult area of the roof to thatch. They are often therefore thatched too thin or with too little compaction.

**Solution:** The corners of the roof need to be stripped and re-thatched. If you are in a high wind area hex-net can also be applied to the corner of the roof to prevent the wind from buffeting the thatch. This general problem is easily prevented by using an experienced thatching contractor.

A corner very thinly thatched



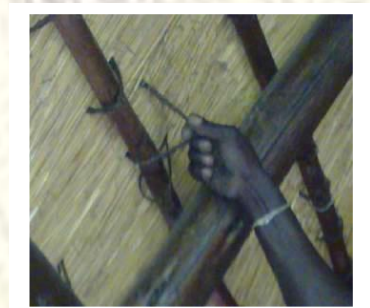
The same corner re-thatched and covered with hex-net.



#### **Problem 4: Inadequate Compaction of Thatch**

**Symptoms:** Accelerated rotting of the thatch, thatch coming out of the capping, regular wind damage and generally endless problems with the thatch leaking.

**The Problem:** This problem is connected with all of the problems mentioned above and many others besides! Inexperienced thatchers and thatchers who rush jobs do not compact the thatch properly on the roof. This causes endless problems and also puts your thatch at an increased risk of fire due to the extra oxygen in between the thatch stalks. The thatch **MUST** be applied to the compaction of 35 - 50 kg per square meter.



**Solution:** This is a very difficult problem to deal with and all depends on the quality and condition of the twines used to tie the thatch. If the twines are in good condition then the entire roof can be re-tensioned and brushed to re-compact it. If the twines are in poor condition or are of poor quality then they will snap as soon as you pull them - in this case the only way to end your problems is to re-thatch the roof to adequate compaction.

#### **PROBLEM 5: Animal and Bird Damage**

**Symptoms:** Thatch hanging out of the roof and small leaks.

**The Problem:** Thatch does not fare well in the face of birds and animals. In some instances where dealing with animals like baboons and monkey the damages caused are almost malicious - the animals will physically pull the thatch out of the roof. If your roof is badly compacted in the first place these damages will be exaggerated as the thatch comes loose more easily.

**Solution:** Whether the bird and animal damage is bad over the entire roof or only over sections, hex-net or bird mesh can be fitted to prevent a lot of damage. It is also important to keep trees pruned well back from the roof to prevent animals having such easy access to the roof or using it as a thorough-fair from A to B.

Correct way to fit bird mesh for baboons (maximum size of holes: 25 mm)  
Bird mesh fitted around 'voetlaag' stitch around first batten with thin galvanize wire.

Correct way to fit bird mesh for baboons (maximum size of holes: 25 mm)  
Bird mesh fitted around 'voetlaag' stitch around first batten with thin galvanize wire.



It is important to always call an experienced thatching contractor to help identify the cause of a leak and prepare a satisfactory long-term solution.

**Important:**



The bird mesh should be lifted at least once a year to remove leaves that have collected on the thatch.  
The leaves rot and damage the thatch.

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