



 **artichouse**

Log Construction Manual
Log Frame

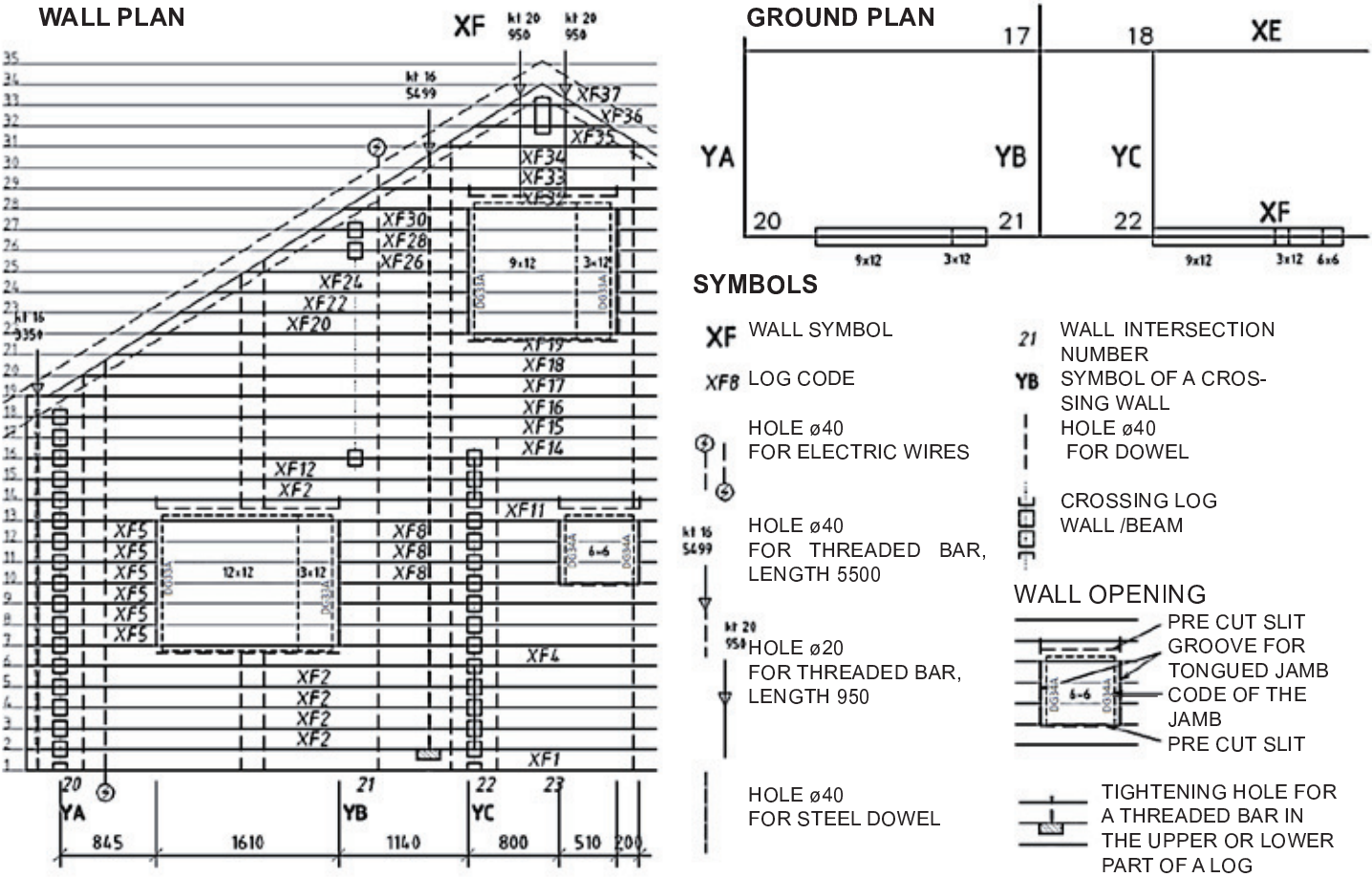
SH2	Rectangular logs	Log frame	8.08.13	V3.1
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SH3 READING LOG DRAWINGS



PROTECTING DRAWINGS

Stick the drawings on a stiff cardboard. We recommend to laminate the drawings to protect them. You can also copy the wall plans each on their own A4 sheet and keep them in plastic pockets which are joined together. This booklet will be handy on a windy day. The unloading instructions should also be enclosed in the booklet, so you can easily find the needed log in the packages.

READING DRAWINGS

The log walls are marked in the ground plan with identifying letters (XF). You'll find the individual wall plans in the drawing according to these letters. In the wall plans the logs are equipped with numbers that follow the wall symbol; e.g. the code XF11 means that the log belongs to the wall XF. The numbering begins from the bottom (XF1, XF2 etc.).

The wall intersections have their own numbers. These numbers will help you to figure out from which direction the wall is illustrated.

The locations of the holes (for electric wires, threaded bars, dowels etc.) are shown with symbols which are explained in the figure above. A log may be quite symmetrical but for the holes, so you have to be very careful to check that you mount the log the right way. Compare the locations of the holes in the wall plan with the wall intersection numbers and turn the log to the right direction before mounting.

MARKING WALLS AND INTERSECTIONS ON THE FOUNDATION

Mark the letter symbols of the walls on the foundation with a waterproof marker or with pieces of cardboard. The same applies to the number codes of the intersections. This will make it easier to mount the logs, before you remember the locations of the walls.

SH4 READING THE “CONTENTS OF DELIVERY”

Contents of delivery					
Date	22.10.2012				
Customer no	K300007				
Contract no	H15425 Abanades				
Pkg	Part no Konf. no	Description	Use	Detail	Amount
Delivery item 1					
Part: Log walls					
203	04533	20*20	Fillet to Laminated beam/Log wall Det - L37,37,38,40	-	3 m
201	04510	42*45	Fillet to tongued jamb Det L4	-	32 m
201	04510	42*45	End of log wall, tongued jamb+boarding	-	4 m
201	04506	42*120	Plank for tongued jamb Det L4	-	32 m
201	04506	42*120	End of log wall, tongued jamb+boarding	-	4 m
302	04447	32*32 l=480	Dowel for log wall Det L1	-	291 pcs
501	01511	Covering plate 140*96	Covering piece for tightening hole, Det L5	-	23 pcs
501	01486	Model 135*275 T	Beam template for laminated log 135*275. Det 30	-	1 pcs
501	01423	Pre-shaped insulation PP 100*447*25	Pre-shaped insulation .Det L2	-	220 pcs
502	01385	Insulation tape for logs D=14	Insulation between logs Det L2	-	834 m
501	01297	Screw 3,5*16 K	Screw to covering plate. Det L5	-	96 pcs
501	01256	Plate muff M16	Bolts for log walls	-	28 pcs
501	01256	Plate muff M16	Extra fastenings for logframe	-	5 pcs
501	01115	Window/door wedges	Wedges for under logs	-	35 pcs
501	01088	Head bolt M10*120, galv.	Screwleg + fastenings Det L400-500	-	2 pcs
501	01082	Head bolt M10*200, galv.	Coach screw for log gable s fixing Det L6	-	16 pcs
501	01071	Twist nail 75*31	Nails for capped muff Det L1	-	1 kg
501	01054	Washer ø30, hole 10.5 mm	Screwleg + fastenings Det L400-500	-	2 pcs
501	01054	Washer ø30, hole 10.5 mm	Washer d=30 for coachscrew 10*200	-	16 pcs
501	01042	Screw-leg ø30/90/90	Screwleg + fastenings Det L400-500	-	1 pcs
501	01037	Capped nut M16	Hat nut to log beams Det L7	-	5 pcs
501	01036	Nut M16	Bolts for log walls	-	28 pcs
501	01036	Nut M16	Extra fastenings for logframe	-	5 pcs
550	01031	Threaded bar M16 L=3000	Bolts for log walls	-	27 pcs
550	01031	Threaded bar M16 L=3000	Extra fastenings for logframe	-	3 pcs
501	01028	Sole plate 60*60*6	Extra fastenings for logframe	-	5 pcs
501	01028	Sole plate 60*60*6	Bolts for log walls	-	28 pcs
501	01027	Connecting muff M16	Connection muff for bolts.Det L1	-	11 pcs
501	01027	Connecting muff M16	Extra fastenings for logframe	-	5 pcs
501	01015	Felt strip 150*6	Damp-proofing under the first tier of logs F1,L1	-	42 m
510	01007	SK-40	Insulation under tongued jambs	-	91 m
Part: Skirting and cornice					
VAT FI02430557					

All the materials that are included in the delivery are presented in this document. They are listed according to the construction stages, beginning from the logs and the log accessories. Notice that the same materials and accessories may be included in different stages; for in-stance a 42x45 batten can be used in the roof, as a tongued jamb and in the intermediate floor.

Use this document when you want to find out which package the materials are in. You will see here also the amount of the material reserved for the construction stage in question.

Even if the needed material is in several packages, take it first from the package stated in the document. In this way you can better control the sufficiency of the materials.

If a material maintained in the document is not found in the package, contact the supplier.

Explanations of the columns:

Pkg
The number of the package in which the material is. The number is given only in the list which comes with the delivery

Part no/Konf.no
Configuration number; important only for the factory

Description
The dimensions and the naming of the material, as indicated in the drawings and in the manual

Use
The main purpose of the material

Detail
The number of the detail drawing, in which the material occurs

Amount
The amount of the material reserved for the construction stage in question. Please note that this does not necessarily equal the total amount of the delivered material, because the material can also occur in connection with other stages.

SH5 READING THE “UNPACKING INSTRUCTIONS”

		22.10.2012	Page 1
		Construction site document Unpacking instructions H15425	
PHASE 1	Open package 101 , there is 2 logs needed. Open package 102 , there is 9 logs needed. Open package 103 , there is 1 logs needed. Open package 104 , there is 4 logs needed. Open package 105 , there is 4 logs needed. Start building the house.		
PHASE 2	Package 101 is already opened, you need 5 from there. Package 102 is already opened, you need 2 from there. Package 103 is already opened, you need 1 from there. Package 104 is already opened, you need 10 from there. Package 105 is already opened, you need 1 from there. Continue building the house.		
PHASE 3	Package 101 is already opened, you need 3 from there. Package 102 is already opened, you need 5 from there. Package 103 is already opened, you need 3 from there. Package 104 is already opened, you need 8 from there. Package 105 is already opened, you need 1 from there. Continue building the house.		
PHASE 4	Package 101 is already opened, you need 17 from there. Package 102 is already opened, you need 9 from there. Package 104 is already opened, you need 7 from there. Package 105 is already opened, you need 1 from there. Continue building the house.		

The *Unpacking instructions* make it easier to find the right logs and minimize the amount of the open log packages at the building site. Open the packages in the given order.

The logs are not arranged according to the mounting order in the packages. There must be enough space around the packages so that you can set the uppermost logs aside if the needed log is in the bottom. Use lumber under these logs as well.

The location of every log can be seen in the log index (Logs of building). You need to open several log packages already at the beginning. Therefore, the log index is the simplest way to find a log.

		22.10.2012	Page 1
		Construction site document Logs of building H15425	
<u>Log</u>	<u>Package</u>	<u>Amount</u>	<u>Log</u> <u>Package</u> <u>Amount</u>
EXT0	101	2	XD4 104 1
HIT	102	2	XD5 101 2
XA1	105	1	XD5 104 1
XA10	102	1	XD6 105 1
XA11	102	1	XD7 101 1
XA12	102	1	XD8 102 1
XA13	101	1	XD9 102 1
XA2	101	3	YA1 103 1
XA2	104	4	YA10 105 1
XA3	101	1	YA2 105 1
XA3	104	1	YA3 103 2
XA4	102	1	YA3 104 1
XA5	104	4	YA4 105 1
XA6	101	4	YA5 101 1
XA7	105	1	YA6 101 2
XA8	103	1	YA7 102 1
XA9	105	1	YA8 101 1
XB1	102	1	YA9 104 1
XB2	101	2	YB1 102 1
XB2	102	1	YB10 102 1
XB2	104	5	YB2 102 1
			<u>TOTAL</u> <u>140</u>

The logs are listed alphabetically. Logs with the same identifying code can be located in several packages. Take the log from a package, which is already opened according to the unloading instructions. In this way the amount of open packages is kept as small as possible.

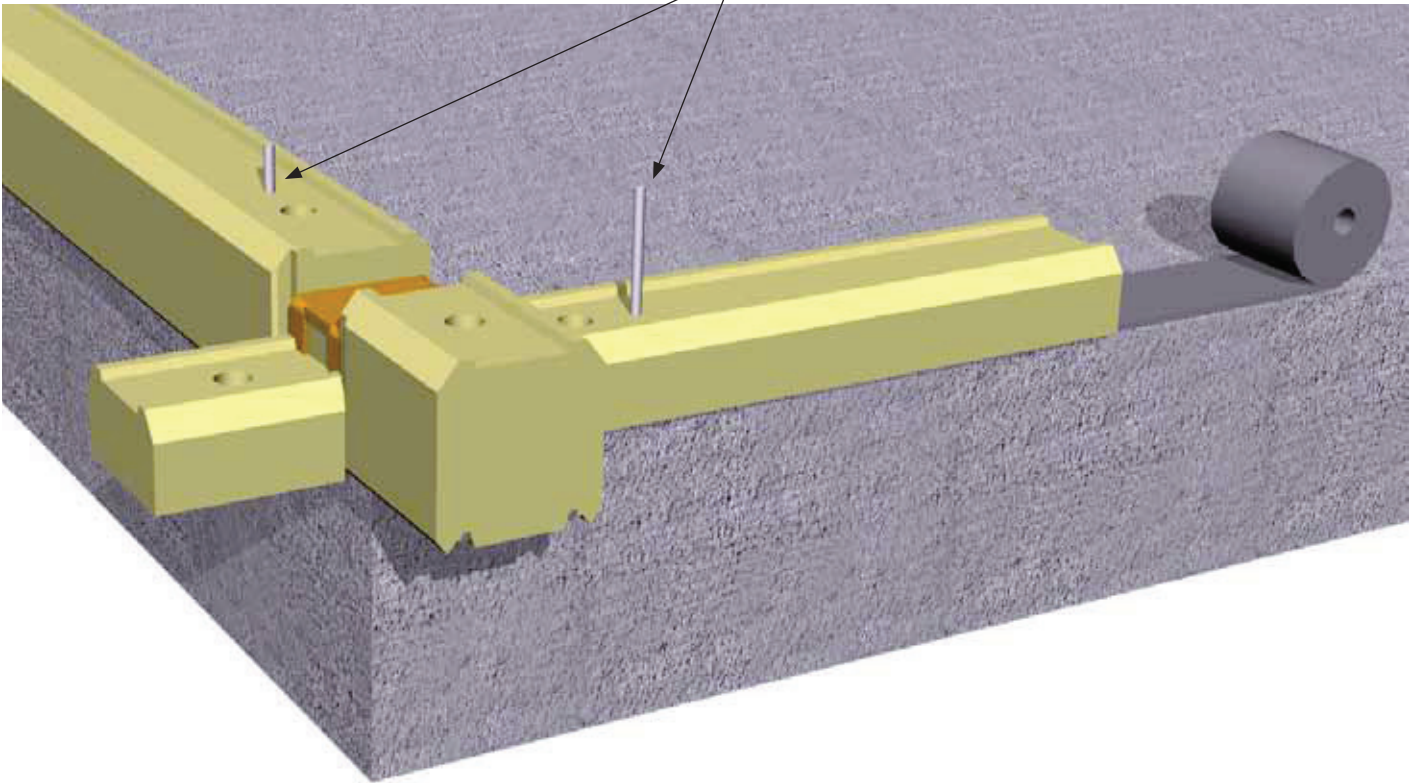
Every log has a label with the identifying code at one end. If the wanted log code is not in sight, the log is probably a short one and lies in the middle of the package. The identifying code is written with a red or blue marker on the upper surface of the log as well. This will ensure the recognition of the log, even if the label had got lost.

Remove log labels as soon as the log frame is finished to prevent label glue adhering and to avoid uneven tanning of the log surface.

Do not lose the number codes of the packages. Erect poles beside the packages and fasten the code labels to them. Also, draw a map of how the log packages are located before opening them. You will need the map if you lose the code labels.

SH6 MOUNTING A FELT STRIP

Holes for anchoring steels are made at the construction site

**INSTRUCTIONS**

- remove any rough spots on the upper surface of the foundation and brush it clean
- check the tolerated deviations of the foundation
- see the dimensioned drawings of foundations and the General Log Construction Manual.
- start the mounting at the corner and be careful to follow the edges of the foundation
- if there are anchor bolts in the foundation press them through the felt strip
- cut the felt to precise measures, so that the strips do not overlap each other even in the corners
- put felt strip also under internal log walls

NOTE

The felt strip must form an unbroken layer between the log and the foundation. The latter two must not have any direct contact with each other. Lay weights, e.g. bricks, at suitable intervals (2-3m) on the felt strip to keep it in place even if it is windy. After mounting the first log layer check that the felt strip is in the right place throughout. Alternatively the felt strip can be fixed to the bottom of the first log before mounting the log.

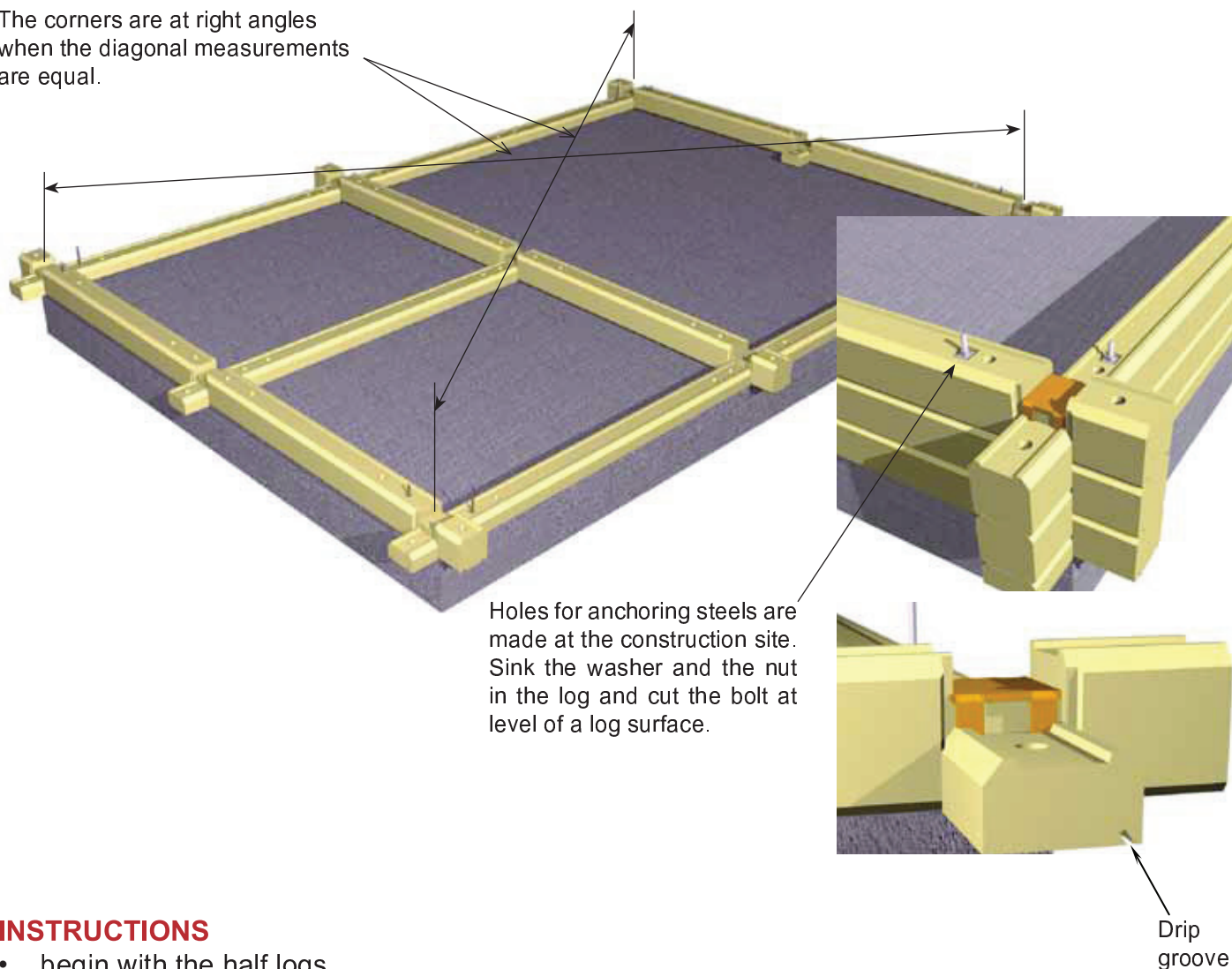
Cut off excessive felt strip along the outer edge of the footing if necessary.

MATERIALS: felt strip

TOOLS: sharp knife

SH7 MOUNTING THE FIRST LOG LAYER

The corners are at right angles when the diagonal measurements are equal.



Holes for anchoring steels are made at the construction site. Sink the washer and the nut in the log and cut the bolt at level of a log surface.

Drip groove

INSTRUCTIONS

- begin with the half logs
- saw a drip groove to the bottom of the half log near the outer edge with a circular saw (275 mm height logs have the factory made groove)
- if there are anchor bolts in the foundation, drill holes for them into the log with $\text{Ø}20\text{...}40\text{mm}$ drill bit, so as to be able to readjust the log sideways later if necessary
- check the location of the felt strip and adjust if necessary
- **be careful to mount the logs the right way, especially the ones that are almost symmetrical**

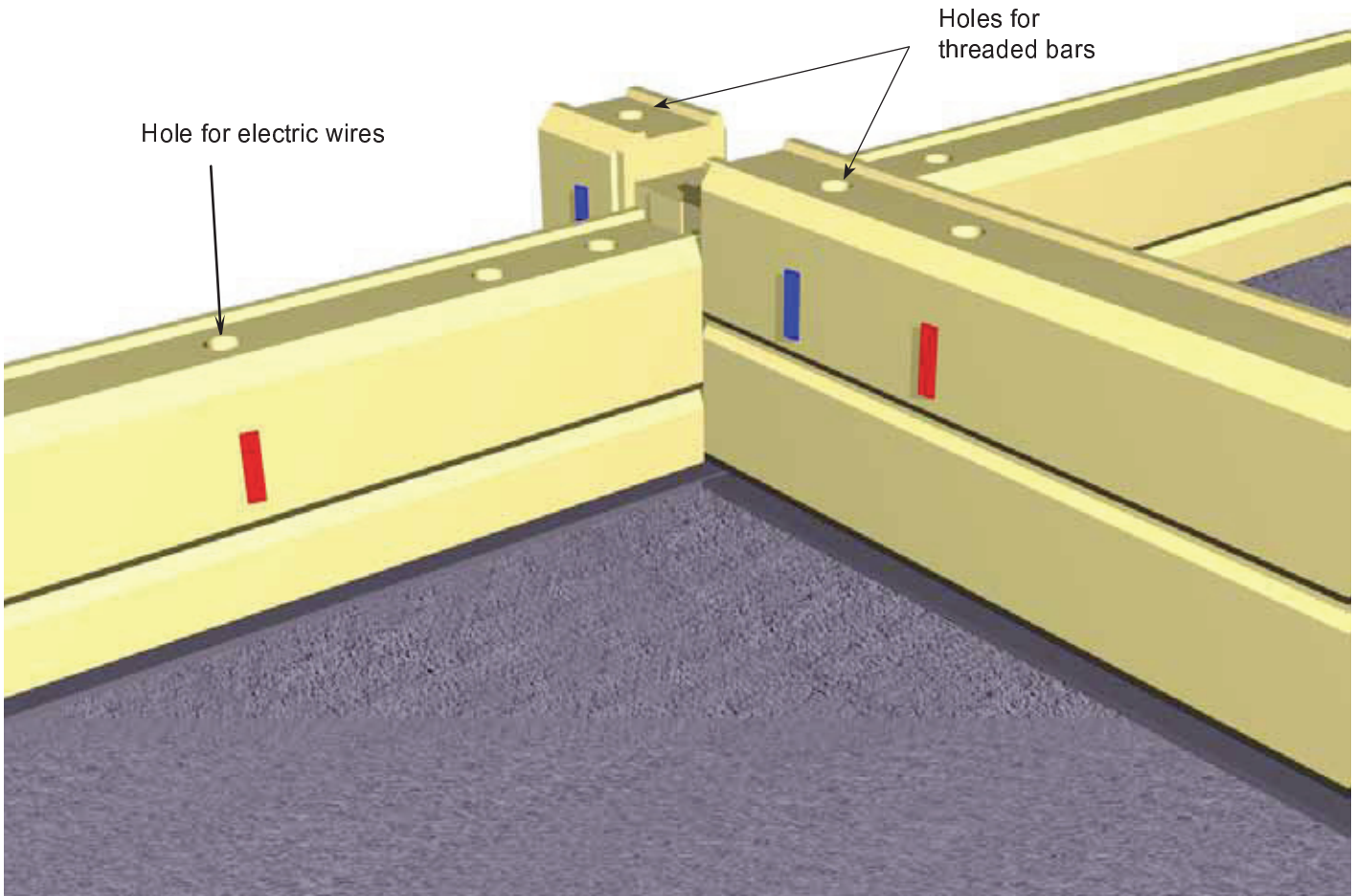
NOTE

Various methods may be used to fasten the logs to the foundation. The foundation plan will show you which method is used in your log house. Mount the log frame so that the logs over-hang the foundation equally on every side. Don't forget to insulate the log junctions. Check the location of the log frame on the foundation as well as the diagonal measurements after you have finished mounting the first layer. Check also the height level of the corners and adjust with wedges, if the difference is more than 5-10 mm from the level. Do this especially before you are going to anchor the frame. Differences over 10 mm must be adjusted with extra casting.

MATERIALS: the logs for the first layer

TOOLS: sledgehammer 5-8kg, drill with bits for wood $\text{Ø}20\text{..}40\text{mm}$, measure, circular saw

SH8 MARKING HOLES FOR BARS AND WIRES



INSTRUCTIONS

- check the locations of the holes for electric wires in the log drawings
- mark the places for the holes on the second-lowest log with e.g. red tape
- do this marking on both sides of the wall
- check the places for the threaded bars in the log drawings
- mark them on the walls with another colour



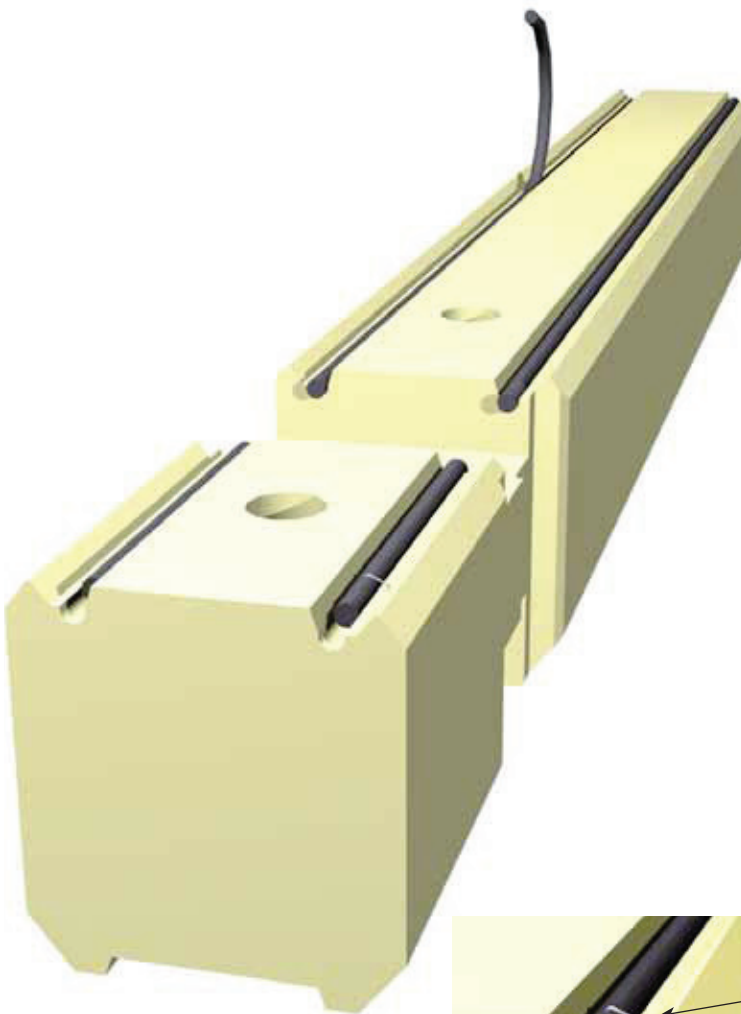
NOTE

Don't use felt pens or ballpoints to mark the wall. Especially water-soluble ink soaks deep into the log and is hard to rub off. Therefore, adhesive tape is good for this purpose. Add tape pieces as the frame gains height. Leave added tapes on their places. The use of different colours simplifies e.g. the work of the electrician if the wiring is begun at the same time with the log frame mounting. Note that above the windows and the doors there can be new holes for threaded bars and electric wires, so mark also them after you have mounted the log above the opening. Do not remove the tapes before you have confirmed the hole locations to the electrician.

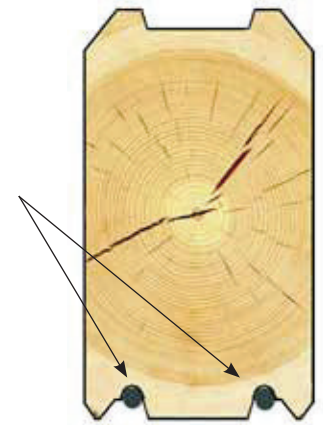
MATERIALS: plastic tape in two or three different colours, log drawings

V3.1	8.08.13	Log frame	Rectangular logs	SH9
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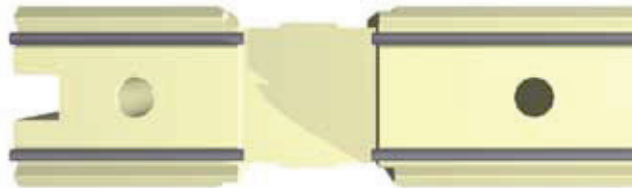
SH9 INSULATING LOG JOINTS



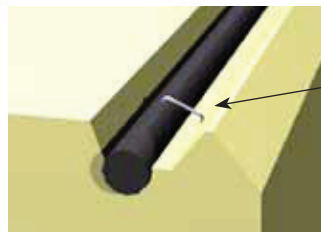
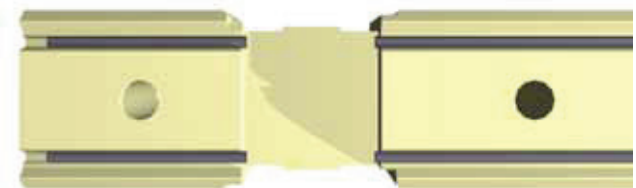
Insulation tapes on the lower surface of the log



Cut the tapes at the log joints 2-3 mm after the joint edge



If there is not a groove for tongued jamb, end the tape circa 20 mm before the log end



Ensure the fastening of the tape by stapling if needed

INSTRUCTIONS

- turn the log upside down, grooves for insulation tapes are on the lower surface of the log
- make sure the grooves for insulation tapes are clean and dry
- if necessary, clean and dry the grooves e.g. by blowing compressed air
- press the tape into the groove
- at the log joints, let the tape go 2-3 mm over the processing edge
- if there is groove for tongued jamb at the log end, let the tape go 2-3 mm over the log end
- if there is not a groove for tongued jamb, end the tape circa 20 mm before the log end

NOTE

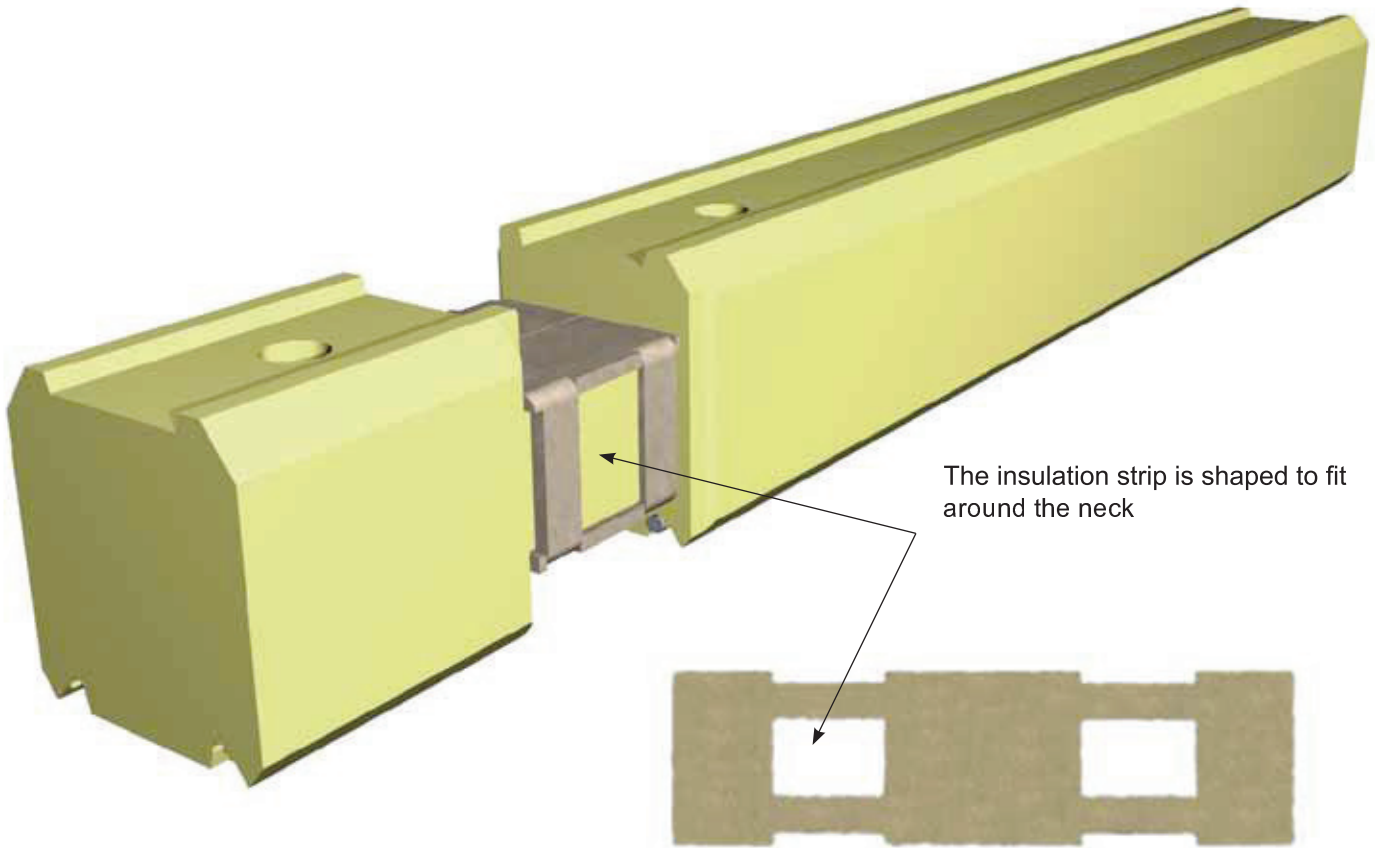
Do not pull the insulation tape too tight to make it withdraw from the opposite end and causing leakage. Check that the tape remains in the groove during mounting. You can ensure that it sticks in the groove by stapling it at 2 m intervals. Install insulation tapes also into the notches outside the wall. Tape prevents water from entering the corner joint. Insulation tapes are not installed in log railings.

MATERIALS: materials, staples

TOOLS: sharp knife, stapler (manual or pneumatic)

SH10	Rectangular logs	Log frame	8.08.13	V3.1
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SH10 INSULATING LOG CORNERS, LOG TYPES LH135 - 275



INSTRUCTIONS

- wind insulation strip round the log neck (see the figure above)
- fasten the strip with staples to every side of the neck

NOTE

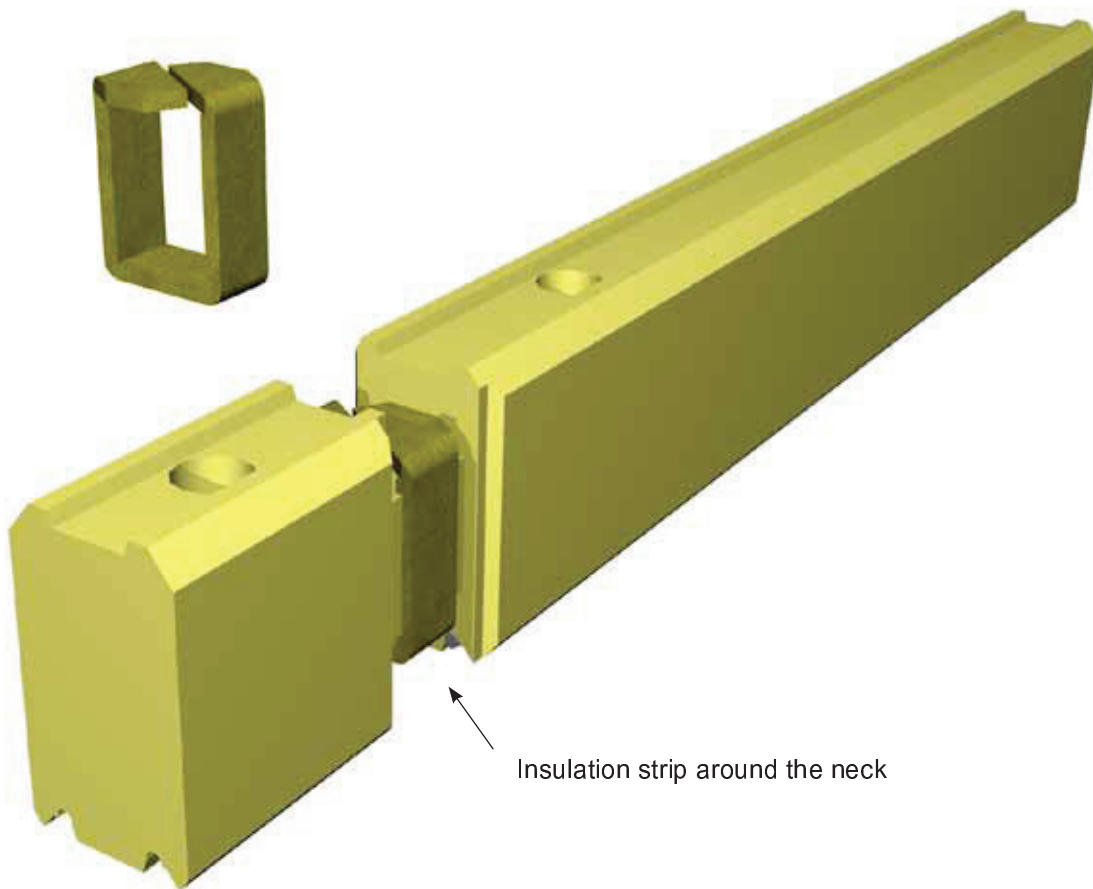
Put the insulation strip to the groove on the neck side. Push the strip ends together according to the figure. The log mustn't be hammered at insulated points, because the wool would be ground off. If you want to hammer the log on the notch, leave the upper ends of the wool un-stapled and turn them aside before hammering. The same applies to the log extension points. Be very careful; the tightness of the corners depends on the success of the insulation.

MATERIALS: pre-shaped insulation, staples

TOOLS: stapler (manual or pneumatic), sharp knife

V3.1	8.08.13	Log frame	Rectangular logs	SH11
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SH11 INSULATING LOG CORNERS, LOG TYPES LH95, HH95 AND HH120



INSTRUCTIONS

- wind insulation strip round the log neck (see the figure above)
- fasten the strip with staples to every side of the neck

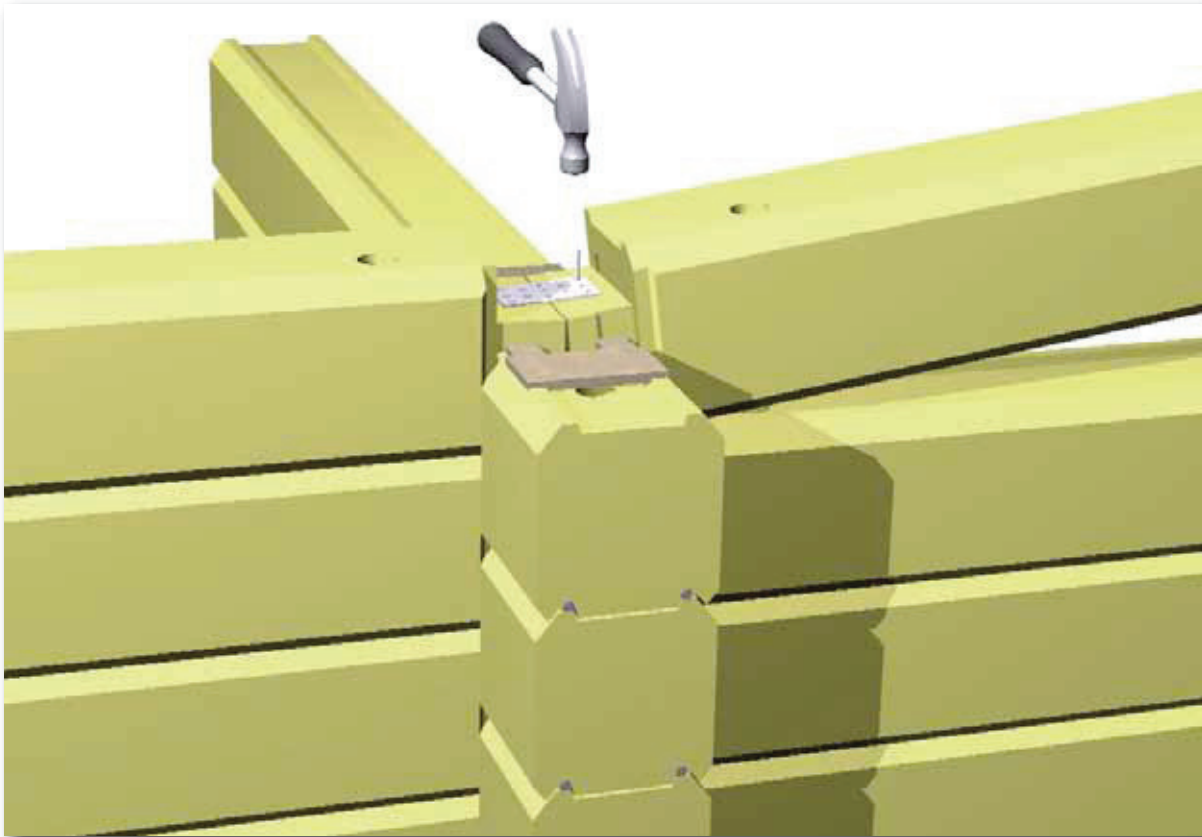
NOTE

Put the insulation strip to the groove on the neck side. Overlap the strip ends according to the figure. The log mustn't be hammered at insulated points, because the wool would be ground off. If you want to hammer the log on the notch, leave the upper ends of the wool unstapled and turn them aside before hammering. The same applies to the log extension points. Be very careful; the tightness of the corners depends on the success of the insulation.

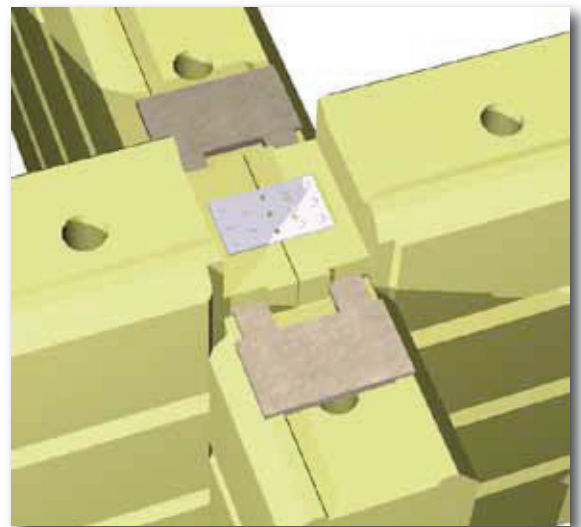
MATERIALS: insulation strip, staples

TOOLS: stapler (manual or pneumatic), sharp knife

SH12 EXTENDING LOGS, LOG TYPES LH135 - 275

**INSTRUCTIONS**

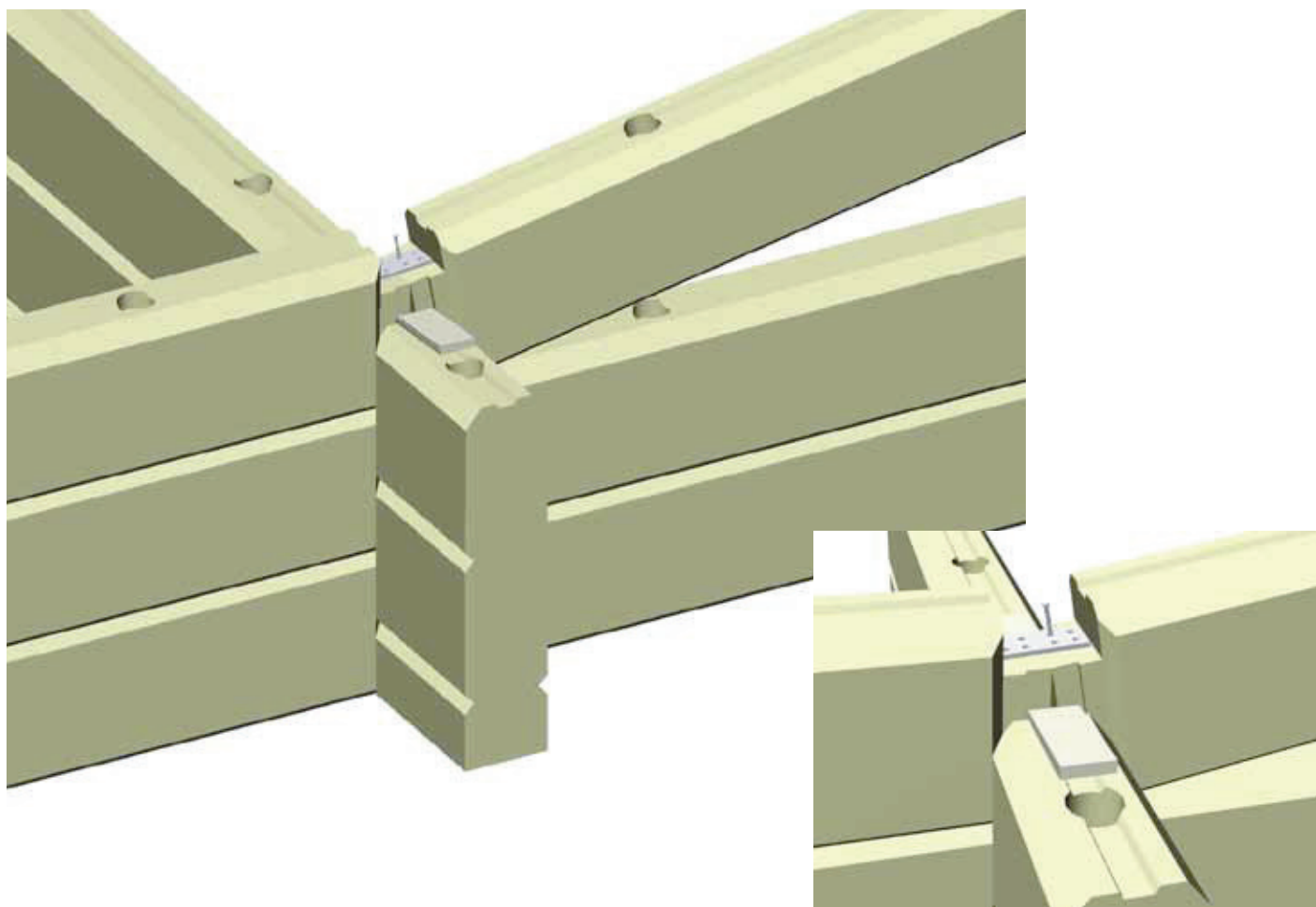
- fit the logs together on and measure the notch
- if the notch is too broad, saw the neck shorter
- fasten the pre shaped insulation in the neck of the lower log
- mount the first log and hammer it tight
- mount the second log and pound only the extension end down to the notch
- check that there is no gap between the log ends
- lift the log from the other end as you nail the connecting plate down
- put the other end down and hammer it tight
- turn the ends of the insulation strip on the plate and fasten them with a stapler

**NOTE**

The connecting plates prevent the log frame from spreading during the mounting. Especially when most of the log extensions fall to the same junction the frame tends to spread. The extension can be pulled tighter by hitting the nails diagonally to the log. Short logs can be extended on the ground before mounting. Remember to measure that the notch gets exactly the right breadth.

MATERIALS: ring shank nails, connecting plate, pre-shaped insulation

TOOLS: hammer, sledgehammer, saw

SH13 EXTENDING LOGS, LOG TYPES LH95, HH95, HH120**INSTRUCTIONS**

- fit the logs together on and measure the notch
- if the notch is too broad, saw the neck shorter
- fasten the wool insulation strip to the neck of the first log. Leave the upper ends of the strip unstapled
- mount the first log and hammer it tight
- mount the second log and pound only the extension end down to the notch
- check that there is no gap between the log ends
- lift the log from the other end as you nail the connecting plate
- put the other end down and hammer it tight
- turn the ends of the insulation strip back to the notch and fasten them with a stapler

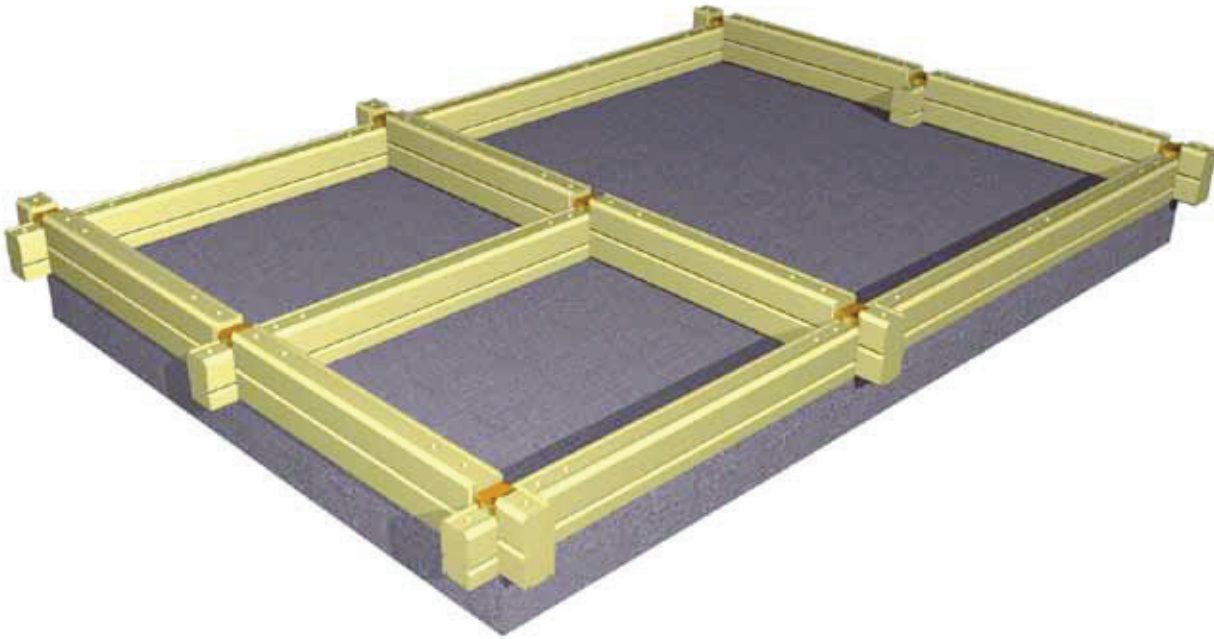
NOTE

The connecting plates prevent the log frame from spreading during the mounting. Especially when most of the log extensions fall to the same junction the frame tends to spread. The extension can be pulled tighter by hitting the nails diagonally to the log. Short logs can be extended on the ground before mounting. Remember to measure that the notch gets exactly the right breadth.

MATERIALS: ring shank nails, connecting plate, insulation strip

TOOLS: hammer, sledgehammer, saw

SH14 MOUNTING THE NEXT LOG LAYERS



NOTE

Labels with identifying codes are not always at the same end. Therefore, before you mount the second log layer, check the direction of every log in the first layer. It is easier to compare the log holes with the drawings if you stand on the side of the wall from which it is illustrated in the drawing. Later on it is easier to check the directions of the logs by comparing the holes: if they don't match, the log is probably the wrong way round or even a wrong one.

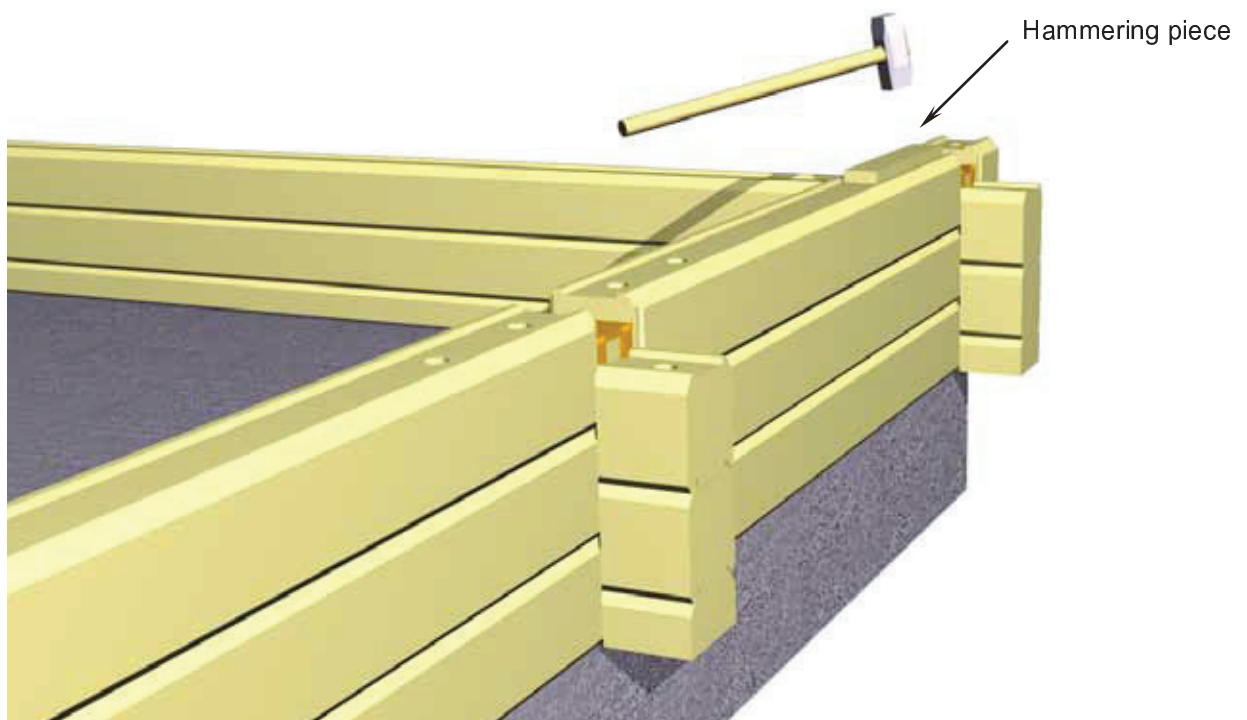
After the second log layer the locations of the walls on the foundation can still be adjusted, if the first log layer is not anchored to the foundation. Check the cross measure and the straightness of the walls with a line. Make necessary alterations if the cross measure differs more than 5mm from the correct measure, or the straightness of the wall more than 3mm. Level the frame with a laser level or a water-filled plastic hose. Check that the logs are hammered tight before levelling. Adjust the height with wedges, if it differs more than 5mm from the level. Heavy hammering can move the log walls, so it is reasonable to keep an eye on the unanchored frame until the walls are weighty enough to keep the frame steadily in place.

Fasten the insulation strip to the log on the ground, on lumber.

4-5 workers are a suitable group to mount an average log frame. Two of them work on the ground, find the right logs and fasten the insulation to them. Another two mount the logs. One person hits the dowels and nails the continuing plates. The work progresses well when every-one has their own jobs and responsibilities. After some log layers everyone will master their part as a matter of routine and there will be fewer mistakes.

Notece that log surface is finished surface, therefore keep the logs clean and use clean gloves. Don't tread on logs which lay on the ground. If you climb the walls, don't wear shoes which leave black marks. Cover the ends of a ladder with tape before use; otherwise they will leave black marks on the log wall. Don't mark anything on the logs with a ballpoint or a felt pen. If you need to mark something, use a pencil. Remove the code labels of the mounted logs from the wall as soon as possible; otherwise the wall will tan unevenly.

SH15 HAMMERING A LOG TIGHT



INSTRUCTIONS

Log with 1 notch:

- lay the hammering piece beside the notch and pound the log tight

Log with 2 notches:

- pound one end halfway down
- pound the other end to ca 2/3 of the final depth
- pound the first end to the bottom
- pound both ends in turns until the whole log lays tight
- change ends more often if the log is short or the notches are close to each other

Log with 3 or more notches:

- start hammering beside the middle notch
- continue towards the ends. Don't use too much force
- finish by pounding beside the rear notches
- go back to the middle and repeat the round until the log lays tight

NOTE

Never hammer a log without a hammering piece. If you pound on the neck, turn the ends of the insulation strip aside. The free end of the log tends to lift while hammering the other end. Someone sitting on the free end will prevent the log from lifting. Finish the job with lighter taps.

MATERIALS: hammering piece = ca 0.5m piece of plank

TOOLS: sledgehammer 5-8 kg

SH16 MOUNTING BAD LOGS

WARPED AND TWISTED LOGS

If a log is stored incorrectly or kept too long in the sun, it can twist or warp. You need to take special actions when mounting that kind of logs. Should the log be badly bent or twisted, it's better to make a new one out of an extra log. Especially short logs are impossible to straighten.

Warped logs:

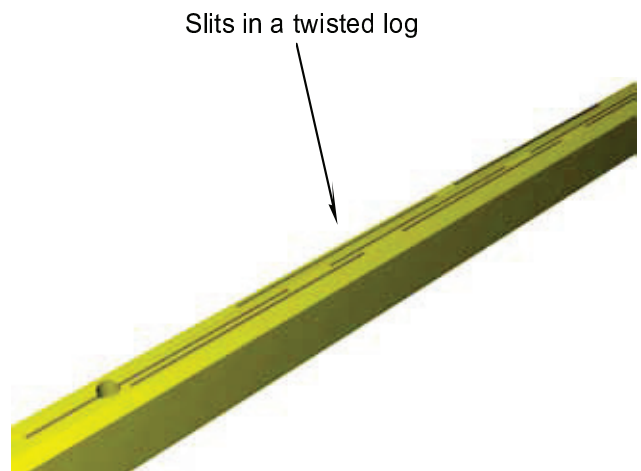
A sideways bent log: First hammer both ends down as deep as they go. Drive a dowel into a hole that is in about the middle of the log. You can now tie a line to the dowel and pull the log straight. Alternatively you can use the opposite wall to push and wedge the log straight. Drive all the dowels in and pound the log ends tight before loosening the line.

A vertically bent log can be mounted normally if not badly bent. Pound the ends tight, and the hump in the middle will settle down as the wall grows. If there will be no load on the log, pull the seam tight with head bolts that you screw through the log.

Twisted logs:

Should a long log be slightly twisted: first pound both ends of the log down as deep as they go without using too much force. Then pound one end tight and at the same time twist the log by means of a steel bar (e.g. crow bar), which you put into the hole that is nearest to the notch. Repeat this at the other end.

A badly twisted log demands more radical actions. Saw lengthways slits through the log from above with a chain saw (see the figure). Make three rows of slits (length ca 1m) to the middle part of the log and overlap them by half of the slit length. The slits will weaken the stiffness of the log so that it can be mounted as described above.



FACTORY ERRORS

Small factory errors can be mended at the building site. If the error is worse, it is better to make a new log out of an extra log.

Should the log lack...

...a groove for the tongued jamb: Saw the groove with a chain saw. The groove can also be sawn after the log has been mounted.

...a hole: Use a $\varnothing 40$ mm drill bit. Measure the location of the hole exactly on both sides of the log. Drill first from the other side half way down, then turn the log upside down and drill through.

...a notch: use another log as a model and sketch the notch with a pencil on the log. Work the notch with a saw and a chisel.

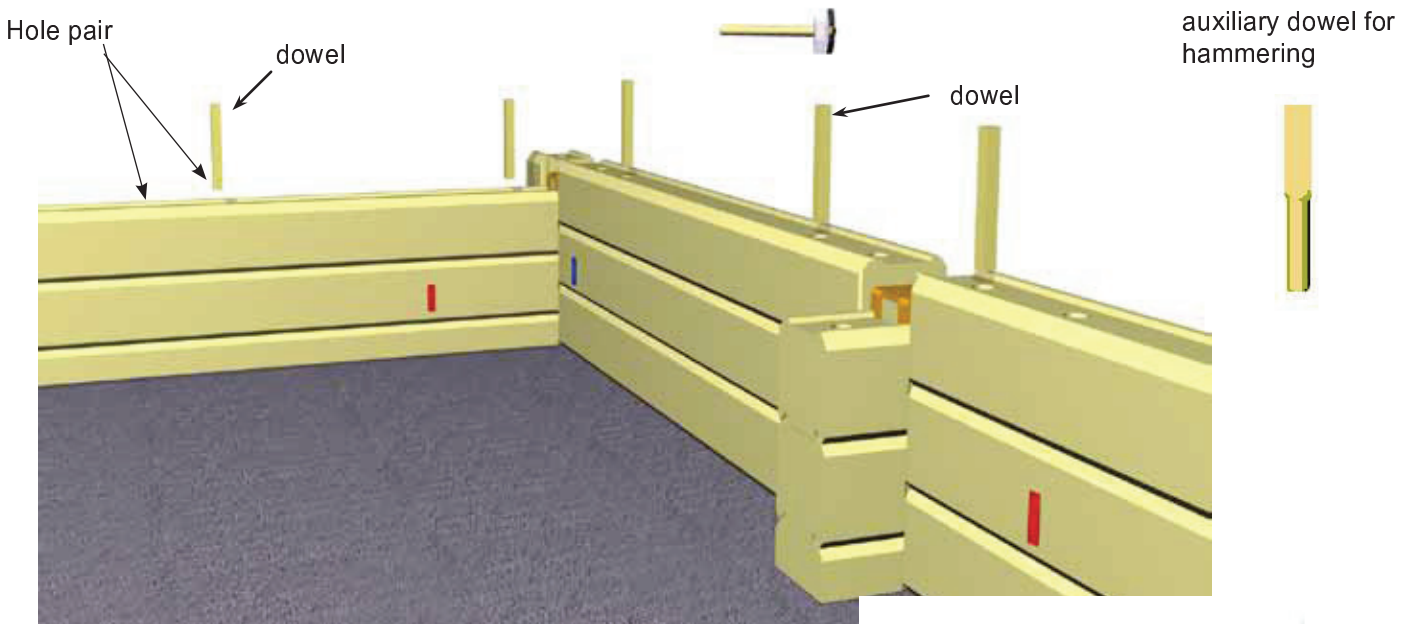
The log is too long: If the notches still match, shorten the log with a saw. For a more aesthetic result use a hand saw. If a notch is wrongly situated, throw away the log and make a new one out of an extra log.

The log is too short: Throw it away and make a new one out of an extra log.

EXTRA LOGS

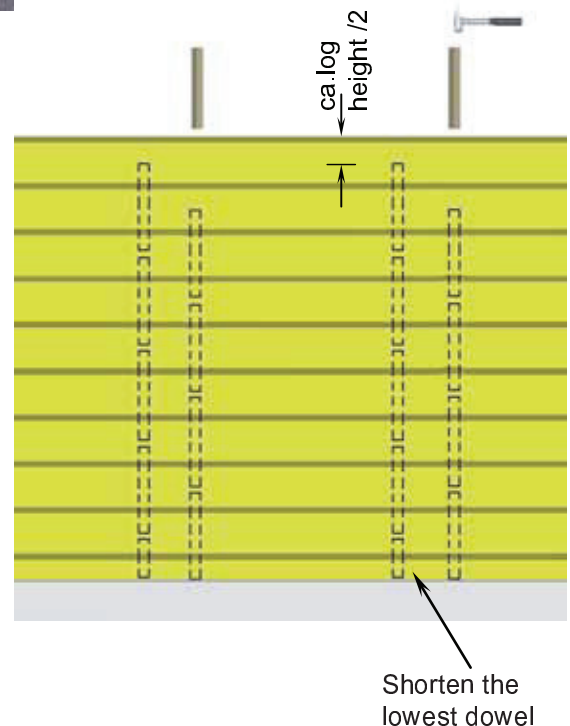
Extra logs can be used to replace badly twisted logs or logs which are damaged during the transfer or the transport. Also a log which has gone mouldy during the storage or is otherwise ugly can be replaced with an extra log. The amount of extra logs depends on the size of the building. Mostly there is no need for them. They have a factory-made notch at one end. Holes and other necessary details are to be provided for at the building site. Drill the holes vertically with a bit of $\varnothing 40$ mm. The location tolerance of the hole is ± 2 mm. Copy the notch from other logs. The location tolerance of the notch is ± 2 mm.

SH17 MOUNTING DOWELS



INSTRUCTIONS

- start doweling after the third log layer
- drive the dowel into the hole so far that the upper end is ca half of the log height.
- the holes are usually in pairs. Drive a dowel only to one hole of each pair
- on the next layer drive a dowel to the other hole. If you are not sure in which hole you put the previous dowel, use the test stick
- if there is only one hole, drive a dowel into it only every second layer
- check the holes for the bars and the wires when the frame is finish at the latest before mounting the roof beams, and remove dowels that have possibly got in those holes



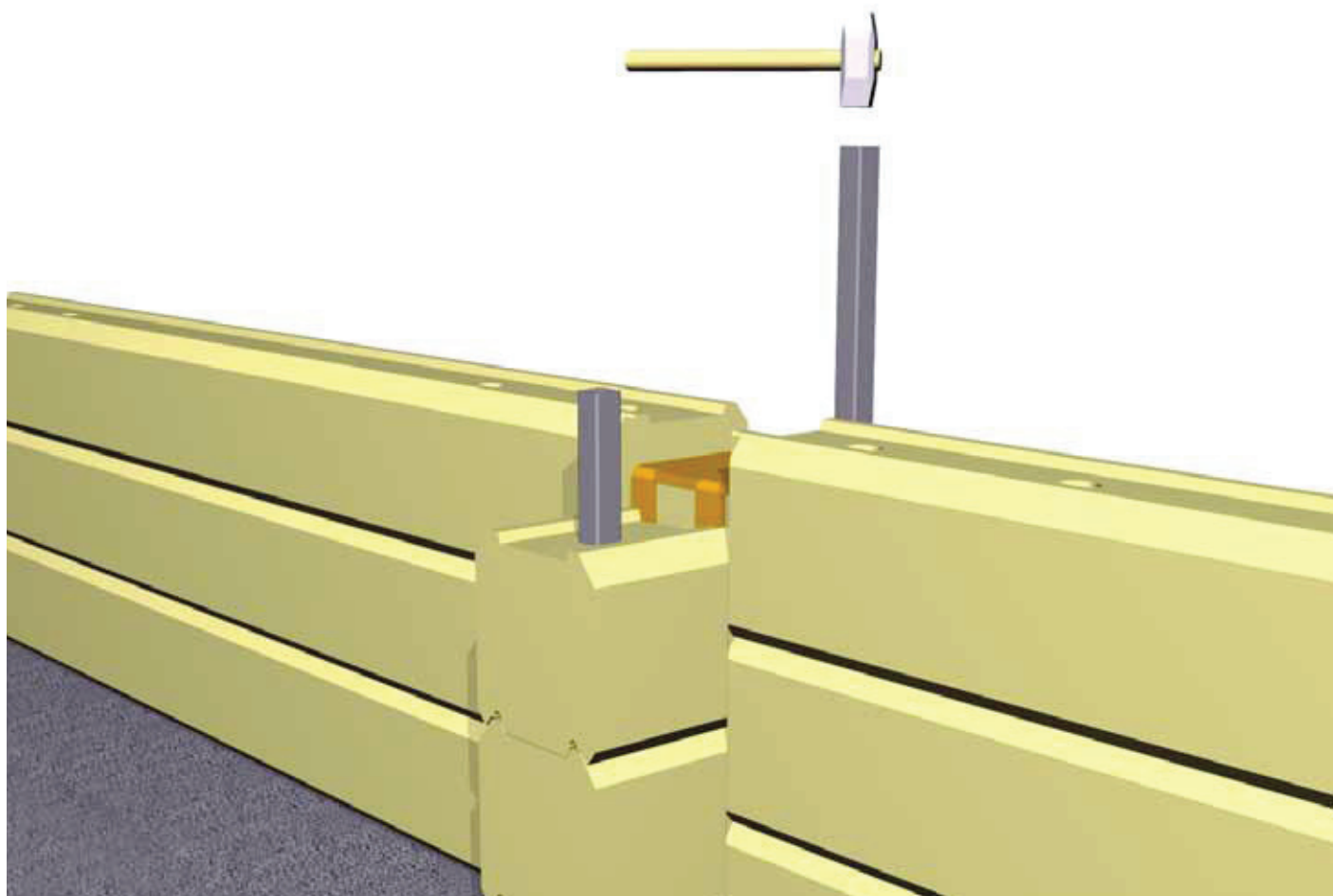
NOTE

The dowels must not touch each other. There must remain a clear distance between them in the hole, so that they will not prevent the log wall from settling. The dowels are cut in the factory to suitable lengths so that there will be no problem with this principle if you follow the instructions carefully. Cut the lowest dowel to suitable length at the building site. If you accidentally drive a dowel into a hole that is meant for bars or electric wires, remove it immediately e.g. with a crow bar. If the dowel is deep in the hole, it may be difficult to get out. Sometimes a dowel will go down if you hit it with a threaded bar. Put a nut in the end of the bar to prevent it from sticking to the dowel. The last means is to weld a drill bit to the end of a bar and drill the hole open.

MATERIALS: dowels, auxiliary dowel for hammering

TOOLS: small sledgehammer 3-5 kg, a stick or bar of ca 0.5m that fits into the hole

SH18 MOUNTING STEEL DOWELS



INSTRUCTIONS

- check the places of the steel dowels in the drawings
- start hammering the steel dowels after the third log layer
- leave ca 8cm of the dowel in sight
- don't pound the lowest steel dowel down to the tightening hole
- the locations of the dowels are shown in the drawings

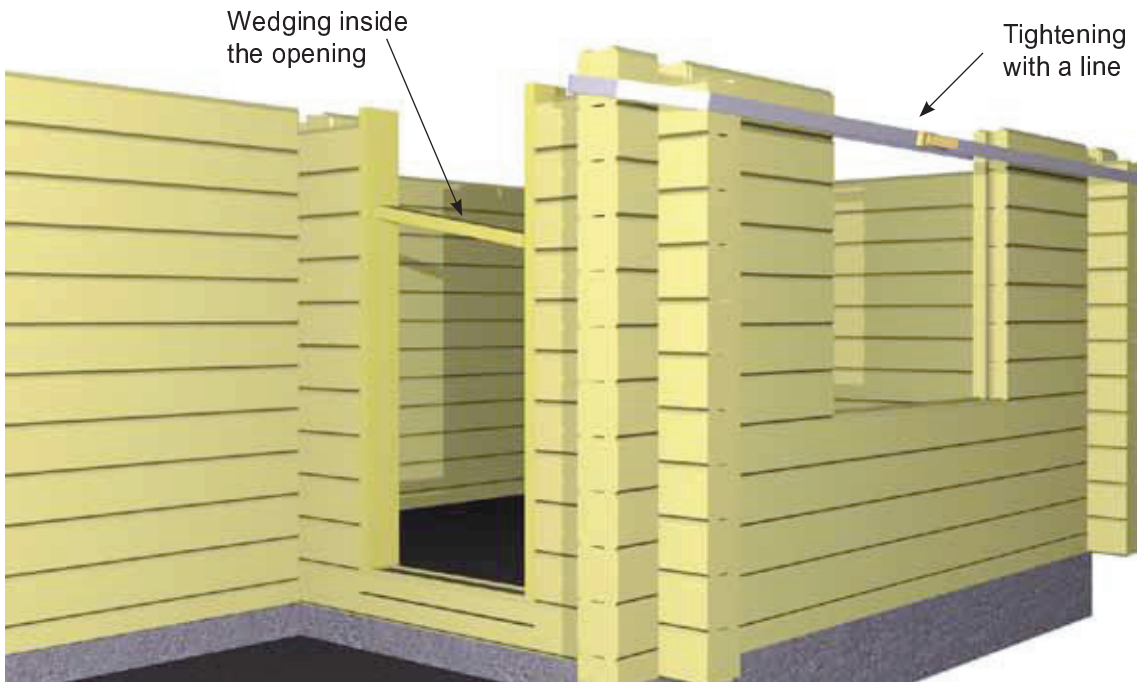
NOTE

The steel dowels are made of square tube. They are generally used in very short and high walls and sometimes in high gables. Check the drawings carefully before you start mounting the logs and pay attention to the places of the steel dowels. Use the third tape colour to mark their holes. Finally put a threaded bar into the steel dowel. Extend the bar with special round-shaped connecting muffs so it fits into the dowel.

MATERIALS: steel dowels

TOOLS: hammer or sledgehammer

SH19 MOUNTING THE FIRST LOG LAYER ABOVE OPENINGS



This advice will help you if you have trouble with the first log layer above the openings.

INSTRUCTIONS

The distance between the notches is larger in the wall than in the log:

- pull the parts of the wall on both sides of the opening nearer to each other by means of a load belt. Find suitable places to fasten the load belt on both sides of the opening, e.g. a log end, or wind the belt round the whole wall
- tighten the load belt by twisting or use the tackle
- when the notches match, pound the log in place
- don't unfasten the load belt before you have driven in all the dowels

The distance between the notches is smaller in the wall than in the log:

- push the walls on both sides of the opening farther from each other
- use as help a piece of plank that is slightly longer than the width of the opening
- before wedging mount the tongued jambs in their places on both sides of the opening
- when the notches match, pound the log in place
- don't loosen the plank before you have driven in all the dowels

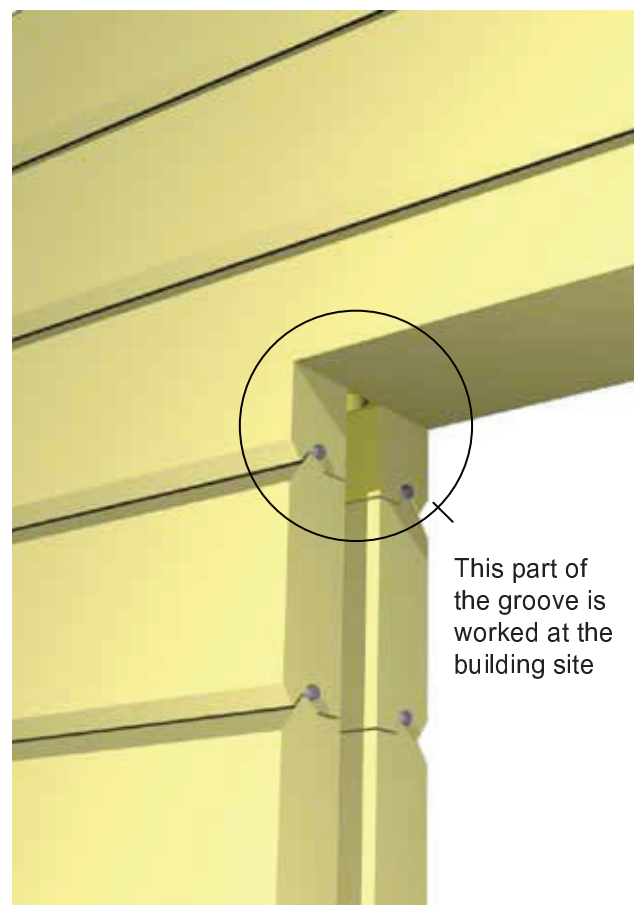
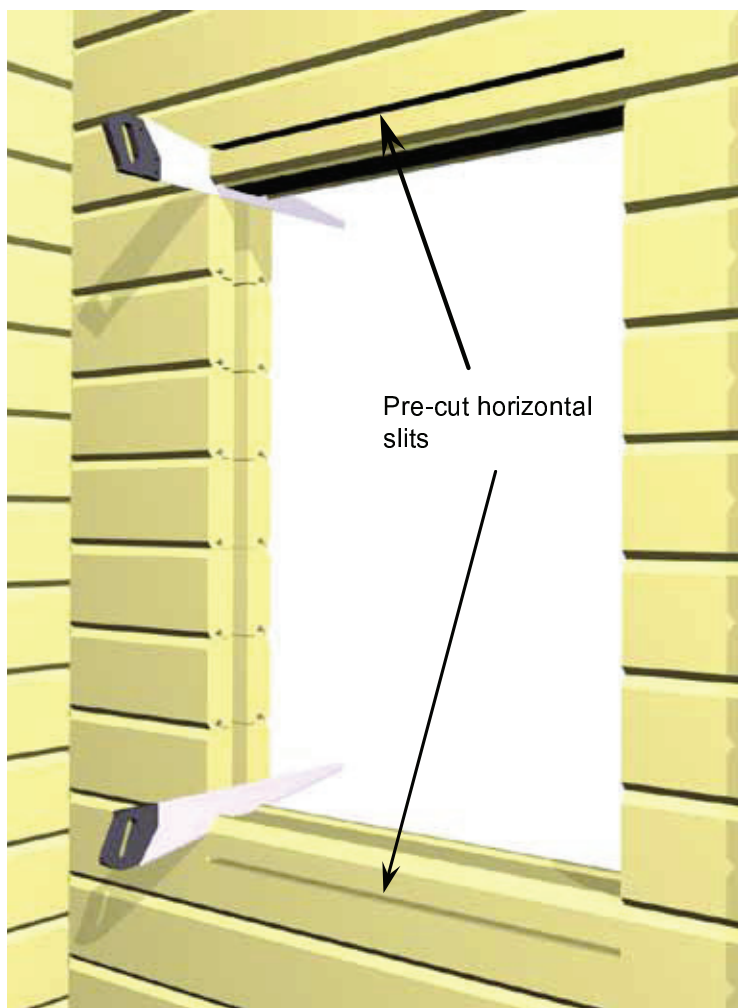
NOTE

If the difference is big, the problem can be due to height differences in the foundation. Adjusting the height level of the corners with wedges can help. In high frames the dimensions should be revised more often. A smaller difference is caused by the tendency of the intersection to rise faster than the free end of the log. The height differences will level out by themselves as the log frame settles.

MATERIALS: tongued jambsplank, size about 50x100

TOOLS: 2-ton load belt, big hammer or sledgehammer

SH20 WORKING THE LOGS ABOVE AND UNDER AN OPENING

**INSTRUCTIONS**

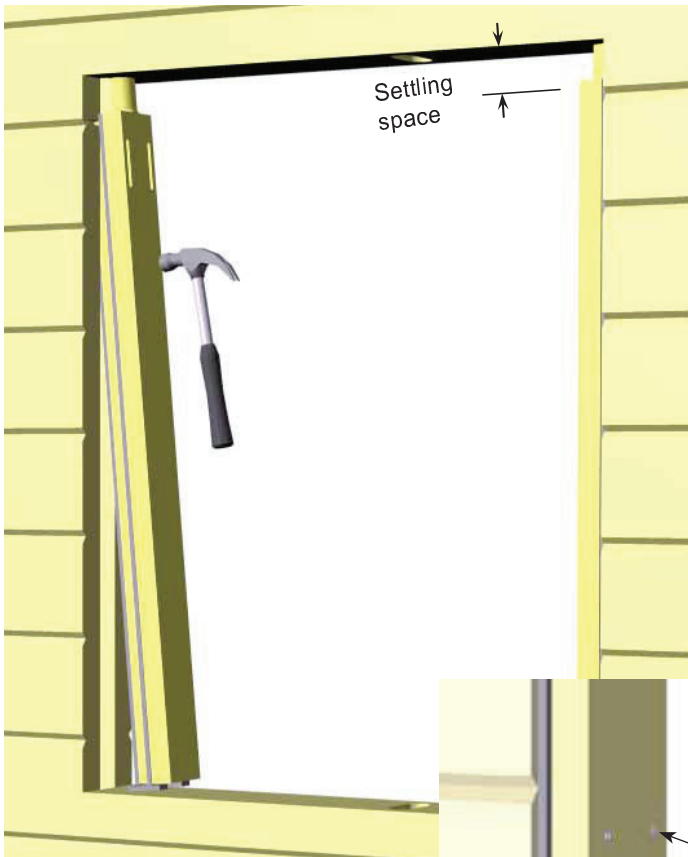
- saw the pre-cut parts off the logs which are under and above the opening
- use chain saw and chisel to make the grooves for the tongued jambs to these logs

NOTE

The pre-cut horizontal slits are not necessarily broad enough. Complete a slit with a hand saw if needed. The simplest way to work the grooves for the tongued jambs is to use a chain saw to saw side-by-side vertical cuts in the log and to finish the job with a chisel.

TOOLS: saw, hammer, chisel, chain saw

SH21 MOUNTING TONGUED JAMBS FOR A WINDOW

**Tongued jamb**

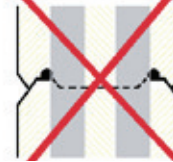
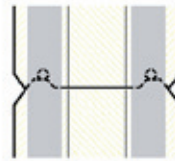
The tongued jamb is factory made. It is pre-cut for suitable height, but you must check the settling space anyway before mounting.

Position of the insulation strips

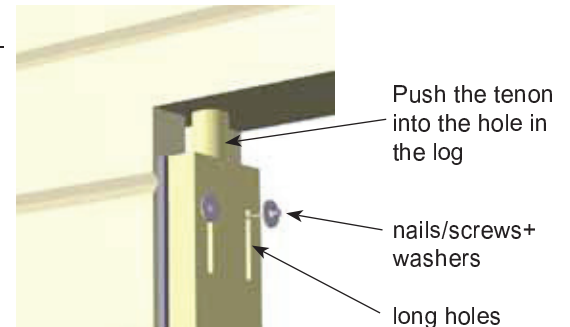
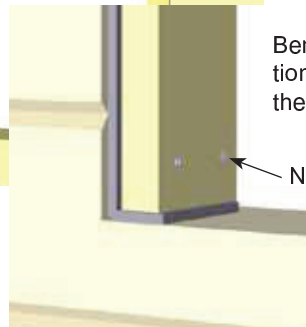
like this



not like this



Place the insulation strips near the edges of the jamb so that it covers the ends of the seam insulation.

**INSTRUCTIONS**

- Select the right jamb for the opening. The code of the jamb is marked on the log drawing (eg. OG0A).
- Drill long holes for the fastening screws at the upper end of the jamb. If the height of the jamb is more than 1400 mm, drill holes in the middle of the jamb, too. The length of the hole must be ca 70 mm at upper end and ca 40 mm in the middle.
- Fasten insulation strips on the tongue and at both sides. Use stapler for fastening. In case of wide jambs, place the insulation strips near the edges of the jamb so that it covers the ends of the seam insulation.
- Push the upper end of the jamb into the hole in the log above the opening
- Hammer the tongued jamb to place from top to bottom.
- The jamb can be tight and demand heavy blows; use a hammering piece, if necessary, to make sure that the jamb won't break.
- Cut excessive insulation (if there are any) off from both sides of the wall.
- Nail or screw the jamb at the lower end to the log. At the upper end and in the middle place the nails/screws into the upper part of the hole. Use washers with these nails/screws.

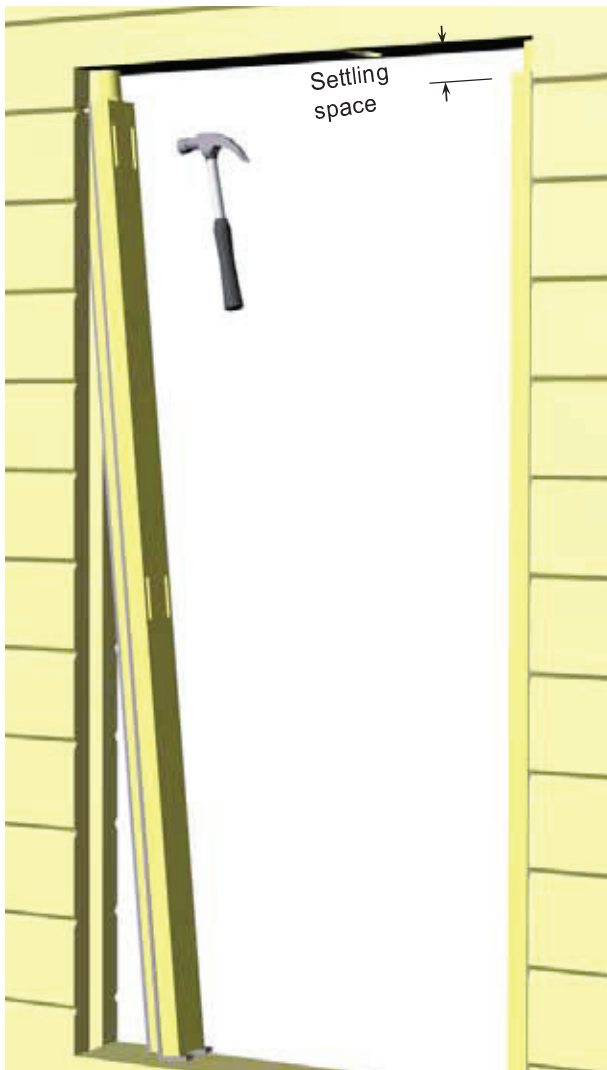
NOTE

The purpose of tongued jambs is to brace the log frame, therefore they must always be installed together with the log frame construction, not later. The jamb plank is the same width as the wall. It is pre-cut for suitable height, but you must check the settling space anyway before mounting. As a rule settling space is 70mm, unless otherwise stated in the drawings. Use generous rather than scanty settling spaces. Before cutting be sure that you have the right jamb for the opening.

MATERIALS: tongued jamb, insulation strip, staples, nails 90x3,4 or screws 90x4

TOOLS: hammer, stapler, sharp knife, saw

SH22 MOUNTING TONGUED JAMBS FOR A DOOR

**Tongued jamb**

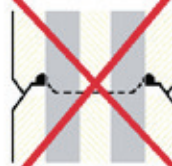
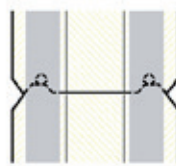
The tongued jamb is factory made. It is pre-cut for suitable height, but you must check the settling space anyway before mounting.

Position of the insulation strips

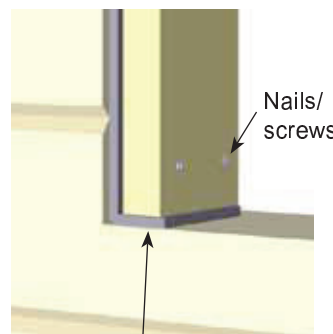
like this



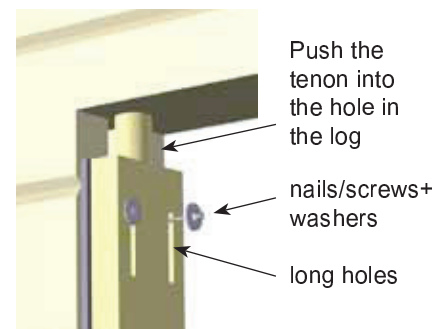
not like this



Place the insulation strips near the edges of the jamb so that it covers the ends of the seam insulation.



Bend the insulation strip under the bottom end



Push the tenon into the hole in the log

nails/screws+ washers

long holes

INSTRUCTIONS

- Select the right jamb for the opening. The code of the jamb is marked on the log drawing (eg. OG0A).
- Drill long holes for the fastening screws at the upper end and in the middle of the jamb. The length of the hole must be ca 70 mm at upper end and ca 40 mm in the middle.
- Fasten insulation strips on the tongue and at both sides. Use stapler for fastening. In case of wide jambs, place the insulation strips near the edges of the jamb so that it covers the ends of the seam insulation.
- Push the upper end of the jamb into the hole in the log above the opening
- Hammer the tongued jamb to place from top to bottom.
- The jamb can be tight and demand heavy blows; use a hammering piece, if necessary, to make sure that the jamb won't break.
- Cut excessive insulation (if there are any) off from both sides of the wall.
- Nail or screw the jamb at the lower end to the log. At the upper end and in the middle place the nails/screws into the upper part of the hole. Use washers with these nails/screws.

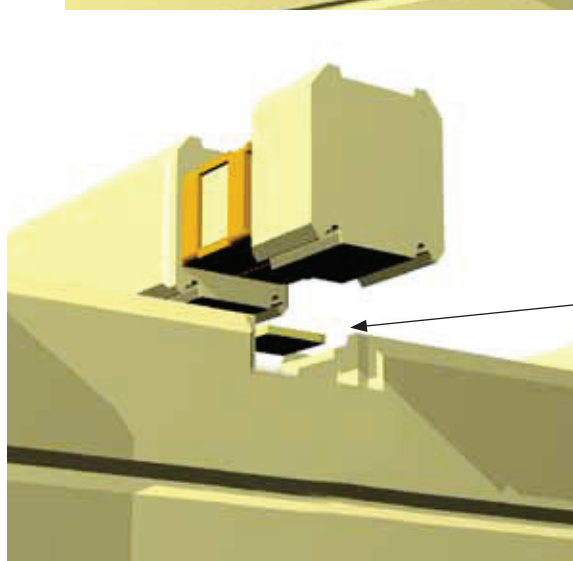
NOTE

The purpose of tongued jambs is to brace the log frame, therefore they must always be installed together with the log frame construction, not later. The jamb plank is the same width as the wall. It is pre-cut for suitable height, but you must check the settling space anyway before mounting. As a rule settling space is 70mm, unless otherwise stated in the drawings. Use generous rather than scanty settling spaces. Before cutting be sure that you have the right jamb for the opening.

MATERIALS: tongued jamb, insulation strip, staples, nails 90x3,4 or screws 90x4

TOOLS: hammer, stapler, sharp knife, saw

SH23 MOUNTING INTERMEDIATE FLOOR LOGS



Piece of plywood 9x60x60

Nail the piece of plywood center of the notch under the insulation. Use plywood only under the beams, not under the wall logs.

INSTRUCTIONS

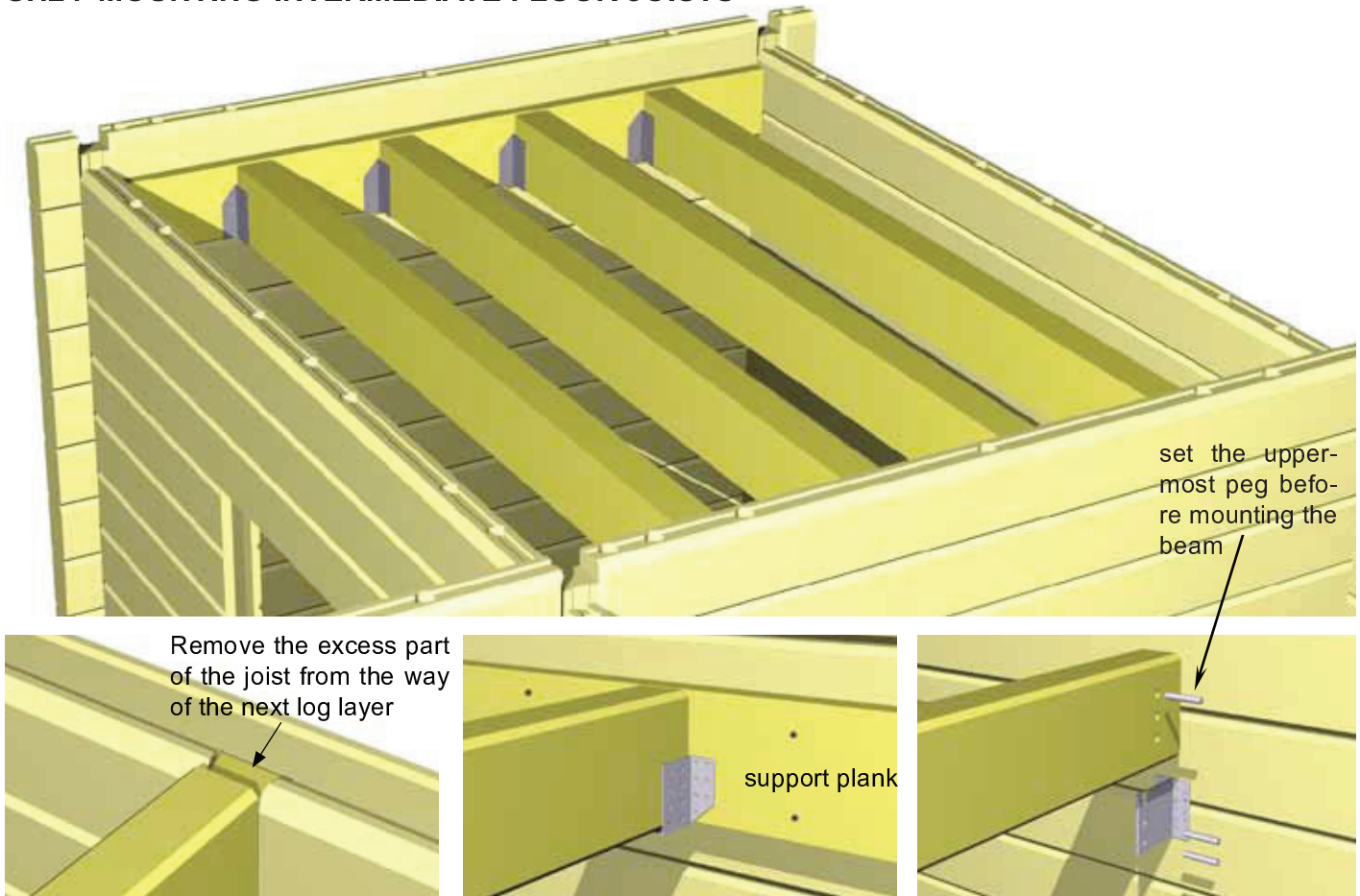
- Fit a piece of plywood under both ends of the floor logs according to detail. Notice, there are always 1-5 extra plywood pieces.
- nail the piece to the middle of the notch
- wind a strip of insulation round the neck of the floor log similarly as to wall logs
- mount the intermediate floor logs like wall logs
- check by measuring that the logs are at the same level

NOTE

The plywood pieces serve to adjust the height of the intermediate floor logs to the same level with the corresponding wall logs. Don't fasten them under logs that belong to a wall, even a short one. The log that comes onto the floor logs has several intersections. Mounting this log will take more time. It is important to hammer it tight before mounting the following log layers. Pound at every intersection in turns, little by little, advancing systematically until the log lays tight at every point.

MATERIALS: logs for floor, plywood pieces 60x60x9, nails 2.8x75 for fastening the plywood pieces, insulation strip
TOOLS: sledgehammer, hammer

SH24 MOUNTING INTERMEDIATE FLOOR JOISTS



DOVE TAIL INSTRUCTIONS

- cut off the tongue of the log under the beam.
- mount the joist
- pound it tight
- cut off the excess part of the log end to make place for the next log

MATERIALS:

- intermediate floor joists

TOOLS:

- sledgehammer
- saw
- chisel

JOIST HOLDER INSTRUCTIONS

- nail the support plank for the joists in place (see detail)
- mark the locations of the joists on the plank according to the drawings
- nail the joist holders to the plank
- mount the joist and fasten it with nails

MATERIALS:

- support plank
- intermediate floor joists
- joist holders
- ring shank nails
- nails 5.1x150

TOOLS:

- sledgehammer
- hammer

CONCEALED JOIST HOLDER INSTRUCTIONS

- measure and mark the locations of the joists
- nail the concealed joist holder to the wall
- drill holes for the steel pegs to the end of the joist
- put the topmost peg in
- lift the joist in its place
- put the rest of the pegs in

MATERIALS:

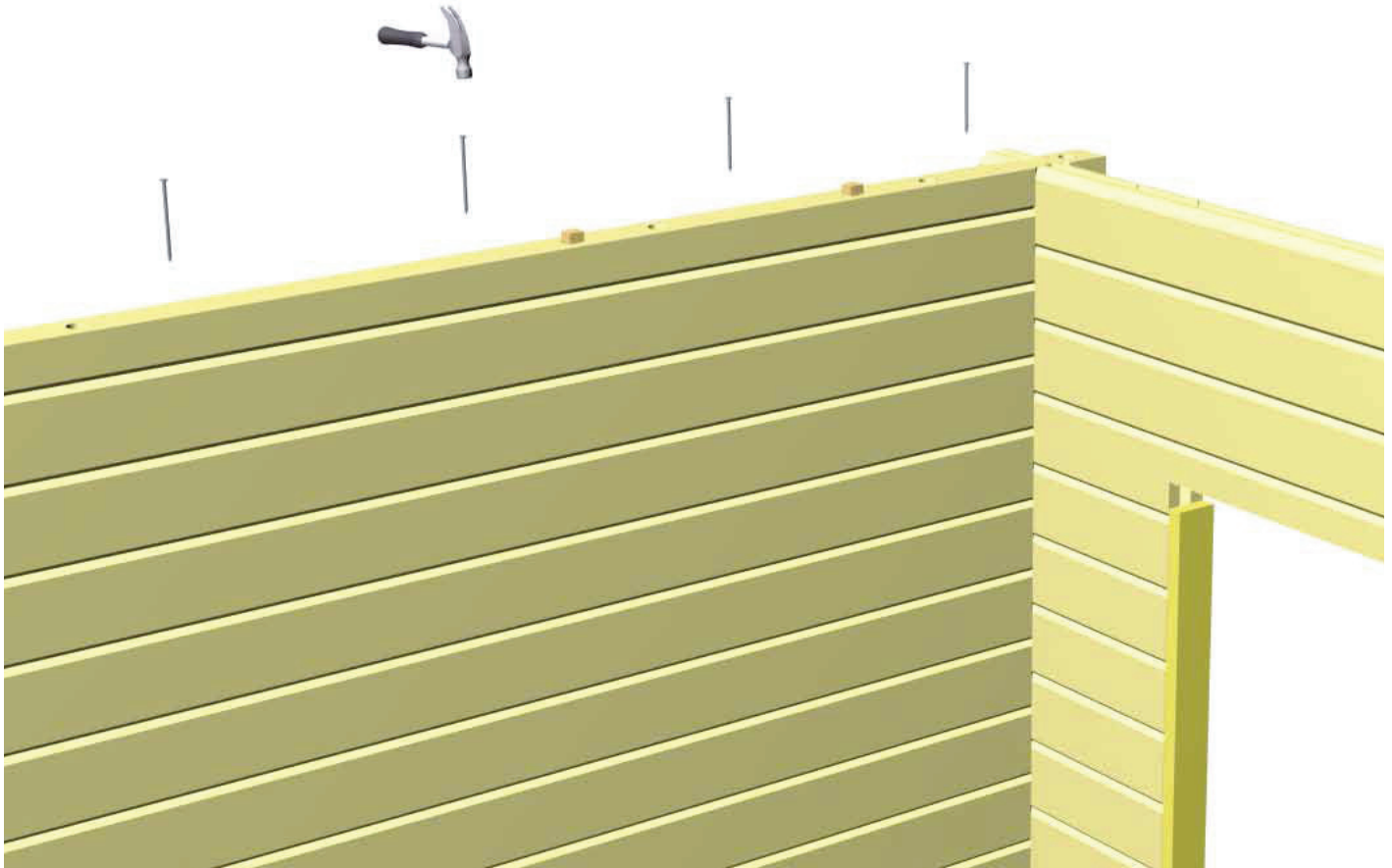
- intermediate floor joists
- concealed joist holders
- ring shank nails

TOOLS:

- drill with $\varnothing 12$ bit
- hammer

NOTE

The joist holders can be nailed to the logs or to the support plank already on the ground, so the floor joists can be mounted immediately after these logs have been mounted. The drawings will show the distribution and the height of the joists. If there is no mention of the amount of the nails, drive 16 nails to every joist holder and fasten the support plank to the wall with at least 4 nails/ every joist end.

SH25 FASTENING THE TOPMOST HALF LOG**INSTRUCTIONS**

- check the distance of the nails/screws in the drawings; if not mentioned, use 500mm
- pound the nails/screws tight
- saw the dowels to the same level with the log

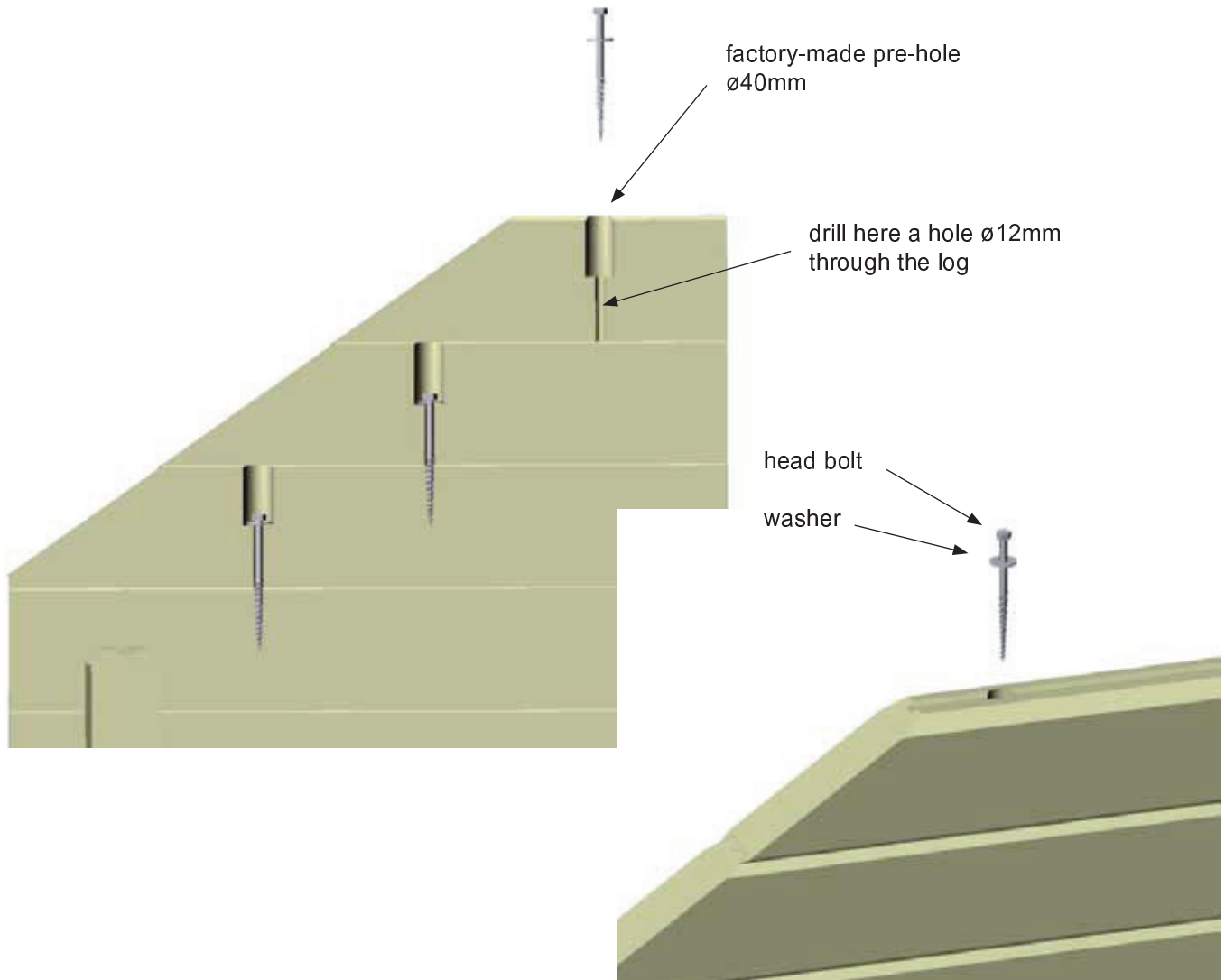
NOTE

Check the drawings for the way to fasten the topmost log. In some cases head bolts are used instead of nails. Use at least two nails/screws for even short logs.

MATERIALS: nails 5.1x150, with high logs screws $\varnothing 6 \times 220$

TOOLS: hammer, saw

SH26 FASTENING LOG ENDS AT GABLES

**INSTRUCTIONS**

- drill a hole with ø12 drill bit from the bottom of the pre-hole down through the log
- put a washer to the head bolt and screw the bolt tight

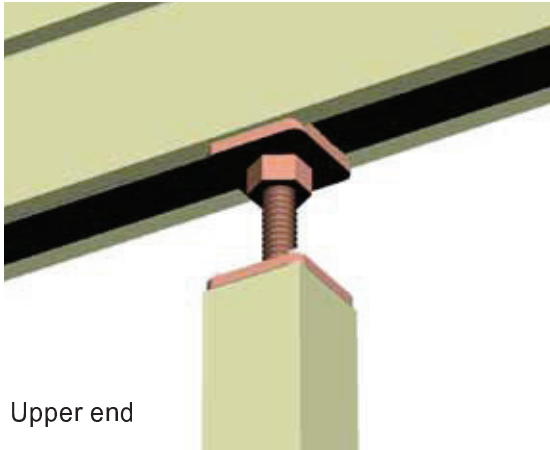
NOTE

Check the drawings for the locations of the screws. Usually there is a screw at every log end in the gable walls. Screws may also be used in internal walls which are as high as the gable walls.

MATERIALS: head bolts (coach screws), round washers ø30mm

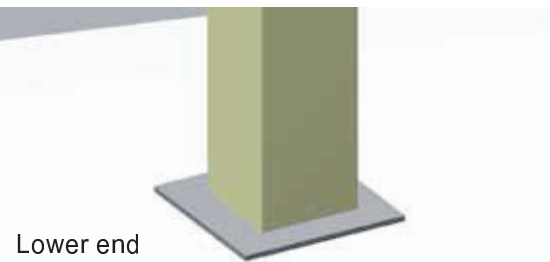
TOOLS: drill, bit ø12/200mm, socket wrench

SH27 MOUNTING PILLARS INSIDE A HOUSE



Upper end

Finished pillar

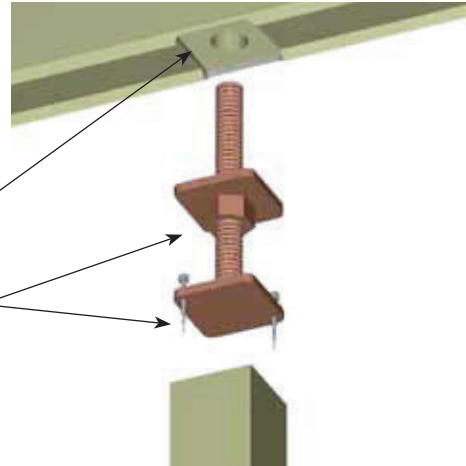


Lower end

Hollow for the washer
at the bottom of the log

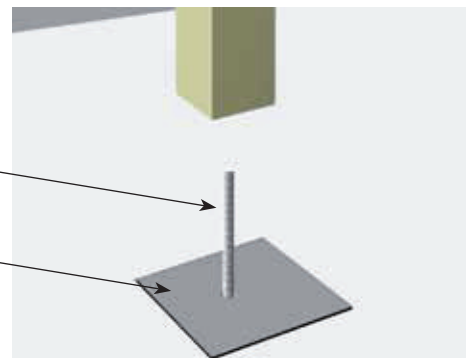
head bolts

screw-leg



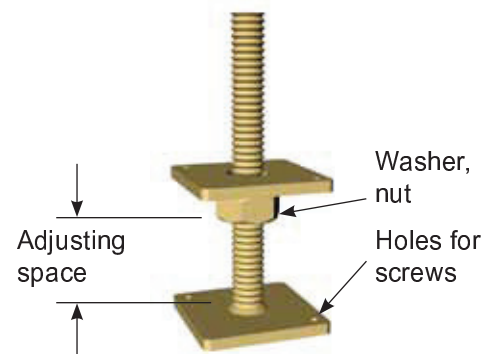
Anchor bolt in the foundation

Felt strip

**INSTRUCTIONS**

- measure the length of the pillar so, that excluding the washer and the nuts the adjusting space of the nut will be at least 70mm (unless otherwise stated in the drawings)
- cut the pillar if necessary and drill a hole for the anchor bolt to the lower end of the pillar
- make a hollow for the washer to the bottom of the log above the pillar
- drill a hole to the middle of the hollow for the screw-leg (depth=the length of the screw plus settling space)
- drill $\varnothing 6\text{mm}$ pre-holes for the head bolts to the top of the pillar, depth 20mm
- fit the screw-leg to the top of the pillar and fasten it with head bolts
- mount the pillar

Screw-leg



Adjusting
space

Washer,
nut

Holes for
screws

NOTE

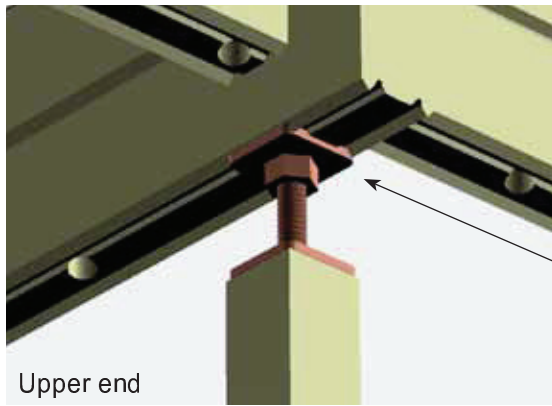
Mount the pillar as follows: unscrew the nut down to its lowest position and push the top of the pillar in its place. Bring the bottom of the pillar to the anchor bolt and put the pillar down to its place. Should the pillar not fit in, shorten the anchor bolt. Use bigger washers for heavily loaded pillars according to the drawings.

There can be an other method in the drawings, too. Check the drawings. If there is not any detail for this, use this method. If the anchor bolts are not installed in concrete during casting, drill a hole for it and fasten the anchor bolt in the hole with HILTI chemical injection system etc.

MATERIALS: pillar, screw-leg, head bolts, a piece of felt strip

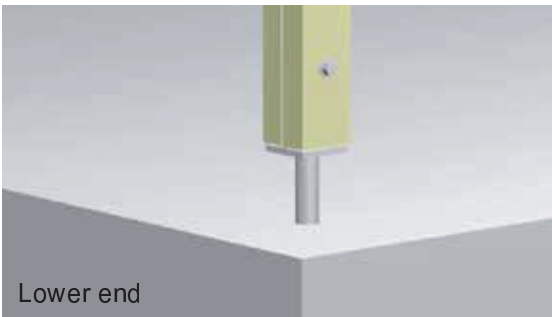
TOOLS: drill, bits $\varnothing 20$ or $\varnothing 30$ and 6/200 for wood, chisel, hammer, spanner (30 or 46mm), saw

SH28 MOUNTING PILLARS OUTSIDE A HOUSE



Upper end

Finished pillar



Lower end

Hollow for the washer
at the bottom of the log

head bolts

screw-leg

Elevated pillar base with
fastening bolts.
Cast in the foundation

INSTRUCTIONS

- measure the length of the pillar so, that excluding the washer and the nuts the adjusting space of the nut will be at least 70mm (unless otherwise stated in the drawings)
- cut the pillar and make the workings for the pillar base according to the drawings
- make a hollow for the washer to the bottom of the log above the pillar
- drill a hole to the middle of the hollow for the screw-leg (depth=the length of the screw plus settling space)
- drill $\varnothing 6\text{mm}$ pre-holes for the head bolts to the top of the pillar, depth 20mm
- fit the screw-leg to the top of the pillar and fasten it with head bolts
- mount the pillar, and fasten it to the base by the drawings

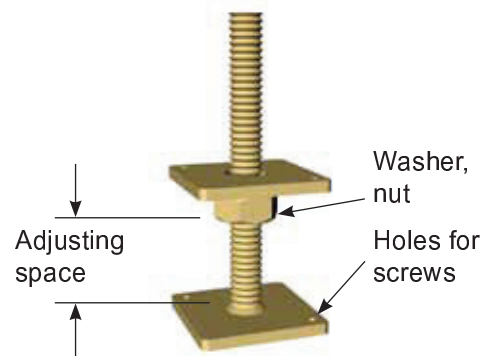
NOTE

You will see in the foundation plan, which system is used to fasten the lower end of the pillar to the foundation. If no other system is given, use the one explained here. The elevated pillar base is not included in the delivery.

MATERIALS: pillar, screw-leg, head bolts, elevated pillar post

TOOLS: drill, bits $\varnothing 20$ or $\varnothing 30$ and 6/200 for wood, chisel, hammer, spanner (30 or 46mm), saw

Screw-leg

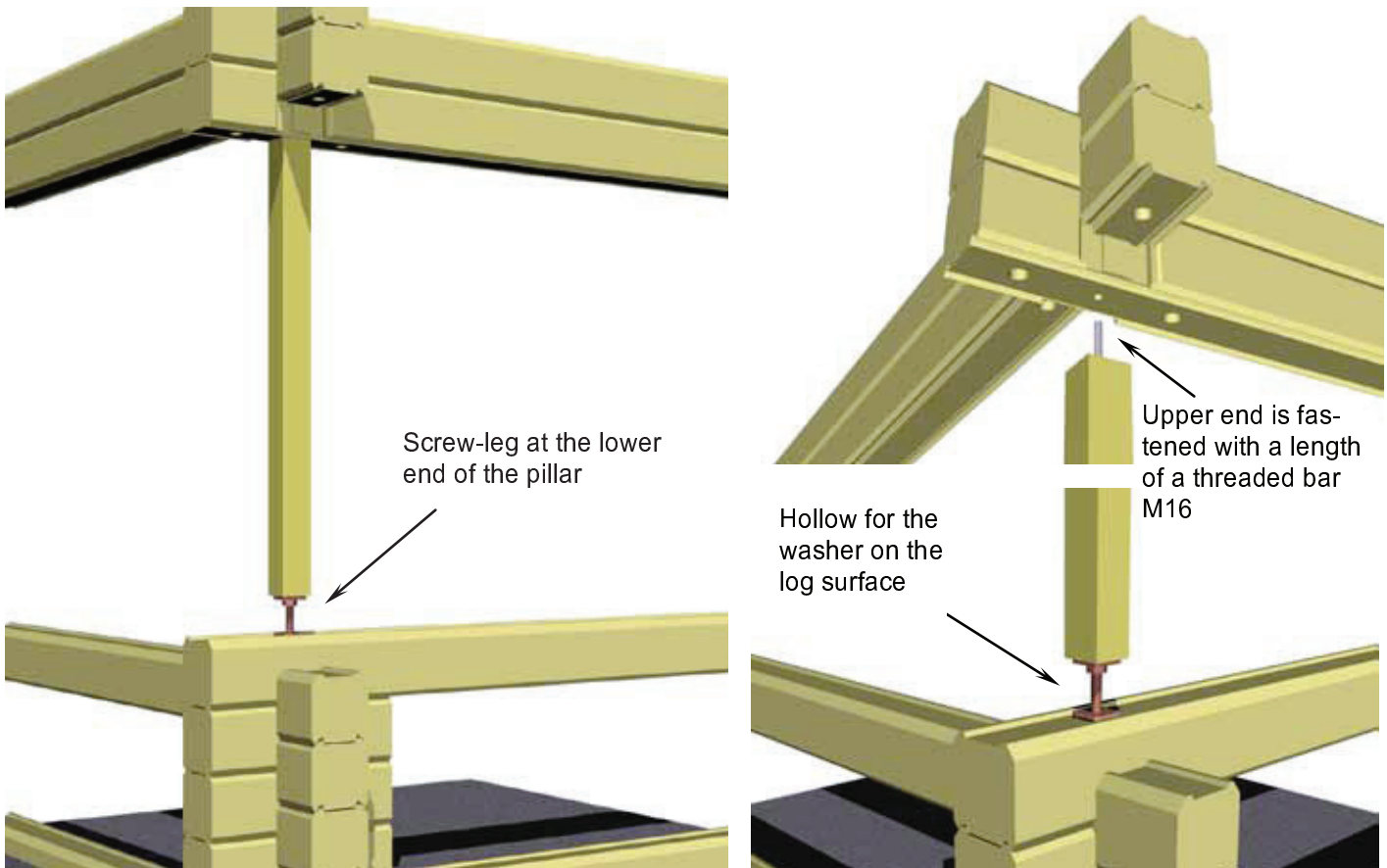


Washer,
nut

Adjusting
space

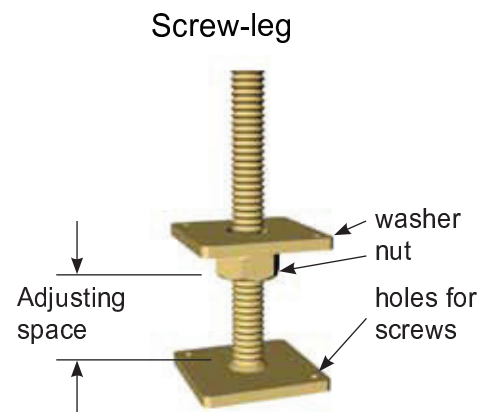
Holes for
screws

SH29 MOUNTING PILLARS ON LOG RAILINGS



INSTRUCTIONS

- check the length of the pillar so, that excluding the washers and the nuts the adjusting space of the nut will be at least 70 mm (unless otherwise stated in the drawings)
- cut the pillar, if necessary and drill a hole for the screw-leg to the lower end of the pillar (depth=the length of the screw plus settling space) and another hole for the anchor bolt, cut from a threaded bar, to the upper end of the pillar
- make a hollow for the screw-leg to the railing surface and drill pre-holes for the head bolts
- make a hollow for the pillar to the log above and drill a hole to the middle of the hollow for the bar
- mount the pillar
- fasten the screw-leg with head bolts



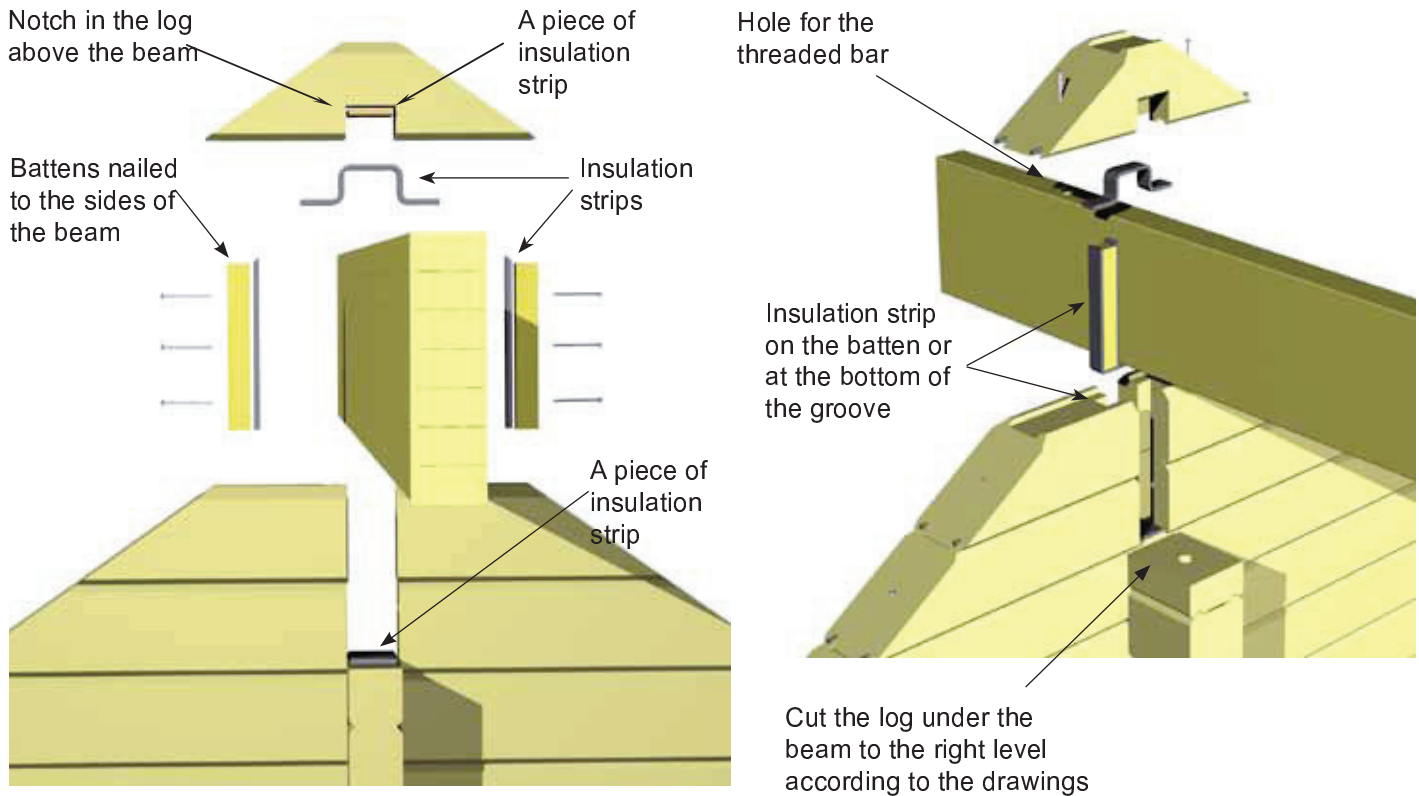
NOTE

Fit the upper end of the pillar at least 10mm deep into the log above, so as to prevent the pillar from rotating.

MATERIALS: pillar, screw-leg, head bolts, washers, a length of a threaded bar

TOOLS: drill, bits $\varnothing 20/200$ and $\varnothing 6/200$ for wood, chisel, hammer, spanner $\varnothing 30$, saw

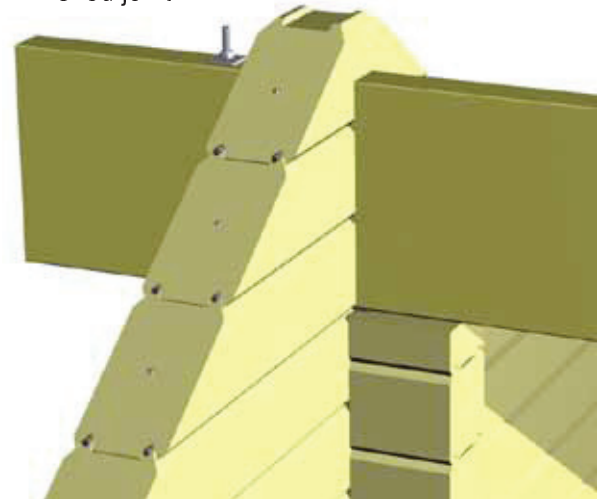
SH30 MOUNTING LAMINATED BEAMS



INSTRUCTIONS

- check the drawings for the height level underside of the beam and work the log under the beam according to that
- cut pieces from a 42x45 batten and nail them to the sides of the beam exactly to the point where it will intersect the log walls. Put a strip of insulation between the batten and the beam
- fit insulation strip in the grooves at both sides of the beam
- pre-drill any necessary holes for threaded bars to the beam on the ground
- lift the beam in its place
- make a notch to the log above the beam, insulate it and mount the log

Finished joint



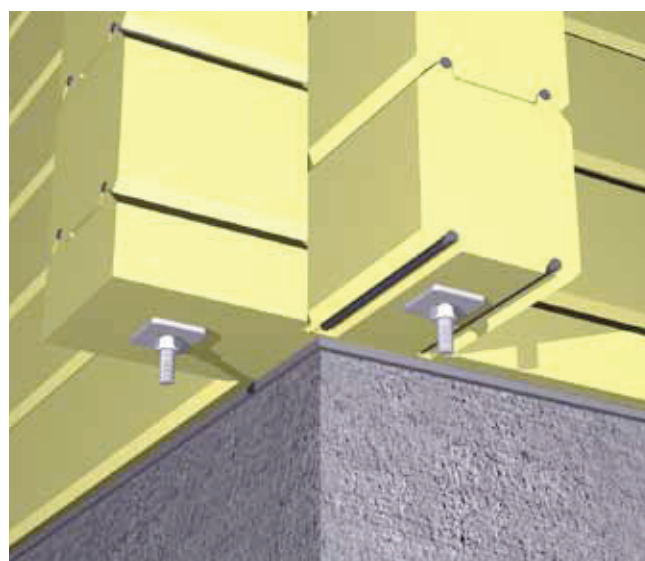
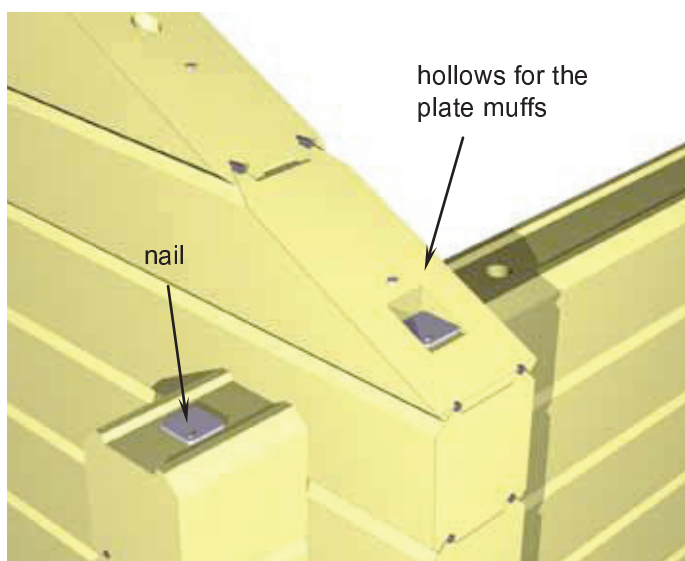
NOTE

It is easier to prepare the beam for mounting on the ground than up on the scaffoldings. Be careful with the measurements: check the places of the walls in the drawings and by measuring on the spot. Please note that especially in the gables the walls are not necessarily upright, so straighten and prop them up carefully to vertical position before lifting the beam in place.

MATERIALS: laminated beam, batten 42x45, nails 3.4x100, insulation strip

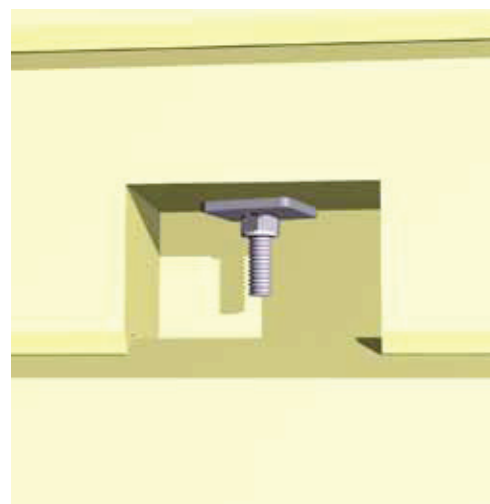
TOOLS: drill, $\varnothing 20/400$ bit, chisel, saw, hammer, spanner 24mm

SH31 MOUNTING THREADED BARS



INSTRUCTIONS

- check the drawings for the locations and the lengths of the bars
- make a hollow to the log for the plate muff (just cut the tongues off the place)
- use the connecting muffs to make a suitably long bar. Cut it with a hack saw or an angle grinder. Don't use the angle grinder close to a log wall
- put a plate muff to the top of the bar and drop the bar to the hole
- drive a ring shank nail to the hole in the plate muff
- put a washer and a nut to the bottom of the bar and tighten the bar
- cut the lower end of the bar off at the level of the nut surface
- **NOTICE! Always protect the logs from metal dust, even when using a hacksaw**



Factory-made tightening pocket in a log

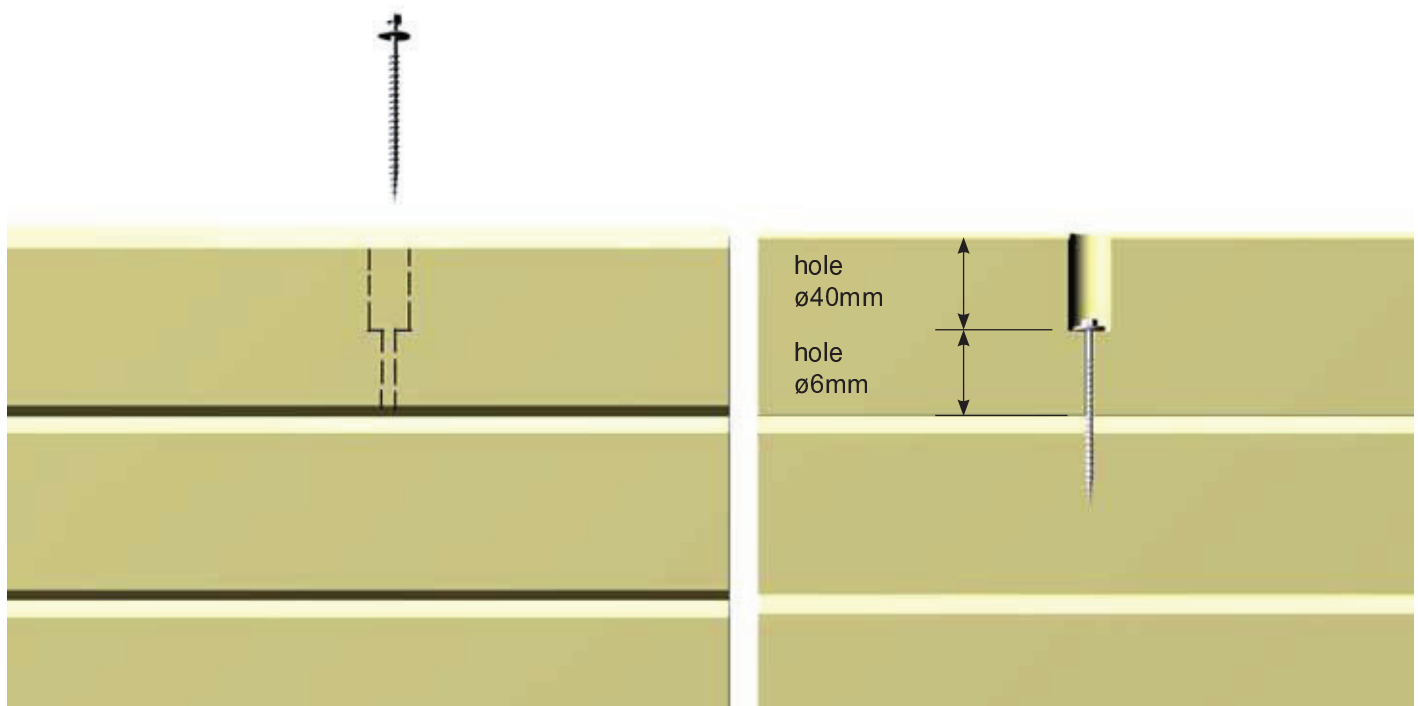
NOTE

The nail in the plate muff ensures that the bar won't rotate while being tightened. Use round-shaped connecting muffs if there is a steel dowel in the hole. If you use an angle grinder for cutting, be careful not to let the sparks hit the log surface. The hot metal shards will sink deep into the wood and later dye the surface as they become rusty.

MATERIALS: threaded bars, connecting muffs, plate muffs, washers, nuts, ring shank nails

TOOLS: chisel, hammer, hack saw or angle grinder, 24mm

SH32 JOINING LOGS WITH HEAD BOLTS

**INSTRUCTIONS**

- check the drawings for the locations and the sizes of the head bolts
- drill a pre-hole to the log with a bigger drill bit
- define the depth of the pre-hole so that at least 1/3 of the head bolt will sink into the lower log (about half-way through a whole log, if 180mm head bolts are used)
- drill a hole with a smaller drill bit from the bottom of the pre-hole down through the log
- put a washer to the head bolt and screw the bolt tight

NOTE

Long head bolts are used in the gables to fasten sloped logs. For instance logs that lay above triangular windows are joined together with head bolts. The locations of the head bolts are shown in the drawings.

MATERIALS: head bolts (coach screws), round washers \varnothing 30mm

TOOLS: drill, bits \varnothing 35-40mm and \varnothing 12mm, socket wrench