



A Guide to Hook Fixing

The use of hooks to fix slate has been widely used in Europe for the last 50 years, and is becoming increasingly popular in the UK.

Hooks can be used in the most exposed locations and because the slate is supported at four points, the resistance to wind uplift is extremely effective. The top edge of the slate is gripped under the top part of the hook. The shank of the hook runs down along the side of the slates in the next course, and the return grip at the bottom of the hook holds the tail of the slate on top. This means that each slate is held in place by four hooks; one at the head, one at the tail and one on each side. The one at the tail stops the hook from sliding down, the ones at the side prevent it from turning and the one at the head holds it at the batten.

Hooks are therefore more functional, quicker to work with and perfectly safe. Repair work is also much easier.

When hooks are used the slates are not tightly pressed together. The hooks positioned at the side of the slate form two fine channels, up which there is considerable rising capillarity. Slates still need to be three times the headlap, but width can be less than twice the headlap, because there is less creep of water and no nail holes.

The preparation for the roof carpentry is exactly the same as for laying with nails. Only the method of fixing is different. Because of the increased rising capillarity when hooks are used the headlap value will change and these are set out on the tables which follow.

Two types of hooks are used, usually called *cramp hooks* and *pointed hooks*.

Cramp hooks are used to clip over the battens and the head of the hook, (the clip on part) must be the same thickness as the batten (usually 25 mm).

Hooks should be made of stainless steel 18/10 grade (18% chromium, 10% nickel) and can be supplied in a matt black finish if required.

When a hook position on a battened roof coincides with a rafter, a pointed hook needs to be used. This means that around 15-20% of the hooks used will be pointed hooks, even when cramp hooks are chosen as the main method. It should be remembered that slates on verges and under eaves, must be nailed down even if the rest of the roof is fixed with hooks.



Minimum Recommended Headlaps when Hook Fixing

Roof Pitch		Roof Slope Following the pitch per m on horizontal	LAP in MM								
			Region 1			Region 2			Region 3		
Cm/m	In degrees		Horizontal Projection of Roof Slope in Metres			Horizontal Projection of Roof Slope in Metres			Horizontal Projection of Roof Slope in Metres		
		0 – 5.5	5.5 – 11	11 – 16.5	0 – 5.5	5.5 – 11	11 – 16.5	0 – 5.5	5.5 – 11	11 – 16.5	
20	11.30	1.020	153								
22.5	12.66	1.025	147								
25	14.00	1.030	141	153							
27.5	15.33	1.037	136	147		153					
30	16.67	1.044	131	142	153	147					
32.5	18.00	1.051	126	136	147	141	153				
35	19.33	1.059	122	131	142	136	147		153		
37.5	20.50	1.068	118	127	137	132	142	153	147		
40	21.67	1.077	114	123	132	127	137	147	142	153	
45	24.00	1.096	107	115	124	119	128	138	133	143	153
50	26.50	1.118	102	109	117	113	121	130	126	134	142
55	29.00	1.141	97	103	111	107	115	123	119	127	135
60	31.00	1.166	92	99	106	103	109	117	113	121	128
70	35.00	1.220	86	92	98	94	101	107	104	110	117
80	38.67	1.280	80	86	91	88	94	100	97	103	108
90	42.00	1.345	76	81	87	84	89	94	92	98	102
100	45.00	1.414	73	78	83	80	85	91	88	93	97
120	50.00	1.562	69	73	78	75	80	85	82	87	91
140	54.50	1.720	65	70	74	72	77	81	79	83	87
170	59.50	1.973	62	67	71	69	73	77	75	80	84
200	63.50	2.237	61	65	69	67	71	75	73	77	81
250	68.00	2.692	59	63	67	65	69	73	71	75	79
300	71.50	3.162	58	62	66	63	68	72	70	74	78
375	75.00	3.880	58	61	65	62	67	71	69	73	76
Vertical			58			60			65		

1. The minimum laps indicated above are given for a normal site within the given region.
2. In the case of the lowest pitch for an exposed site the lap of 153 mm is a maximum. Therefore it is advisable to increase the roof pitch.
3. For a lap greater than 110mm, the calculation given above assumes the use of a hook with a wavy shank to limit the amount of capillary attraction. '
4. The lap calculations have been arrived at by many years of observation in Europe and laboratory studies notably by the French experts Messers Brandilly, Rochette and Sangué.
5. Hooks are available in cramp type (to clip over the battens) and nail type for use on sarking, eaves, verges