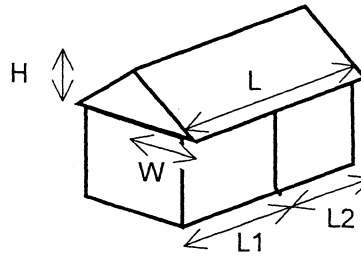


More Complex Gutter Design

All gutters in the UK should now be designed to BSEN12056-3:2000 *Gravity drainage systems inside buildings – Roof drainage, layout and calculation*. This Europe wide standard defines the capacity of gutters based on their size, shape and length, as well as the size of the outlet and downpipe.

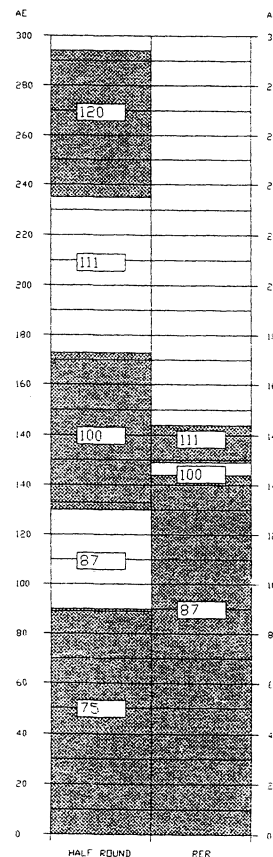
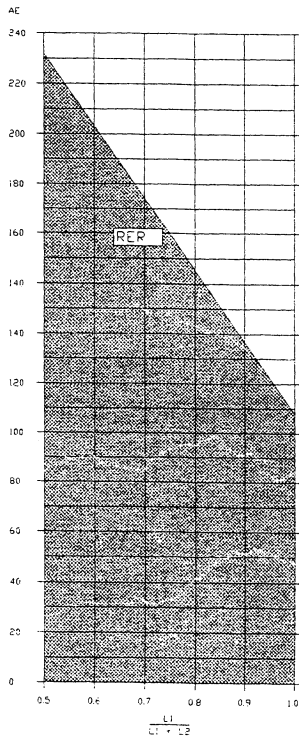
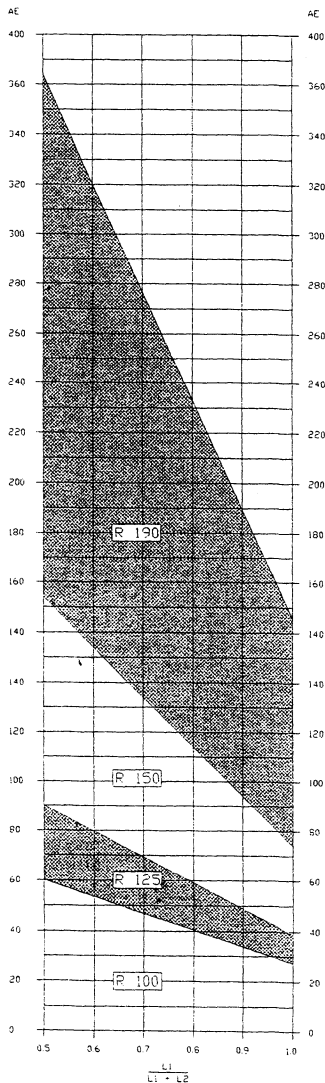
The charts on this page allow the correct gutter to be chosen based on effective roof area and the ratio of gutter lengths. The charts are based on a worst case eaves gutter rainfall value of 0.022 litres per second per square metre



Effective Area, $AE (m^2) = L \times (W + H/2)$

Example

Roof length = 20m, Width = 5m, Height = 2m
 Effective Area, $AE = 120 m^2$
 $L1 = 12m$, therefore $L1 / (L1 + L2) = 0.6$
 For a half round gutter use graph 1 - **use R150 or larger**
 Then from graph 3 - **use 87mm downpipe**



Gutter design

Introduction

All gutters in the UK should now be designed to BSEN12056-3:2000 *Gravity drainage systems inside buildings – Roof drainage, layout and calculation*. This Europe wide standard defines the capacity of gutters based on their size, shape and length, as well as the size of the outlet and downpipe.

Rainfall

There is no standard rate of rainfall in the UK, so for accurate calculations, the user should refer to the maps in BSEN12056-3:2000, to get a site-specific rainfall level. However, for a conservative design for a true eaves gutter, a worst case storm of 0.022 litres per second per square metre can be used.

Installation

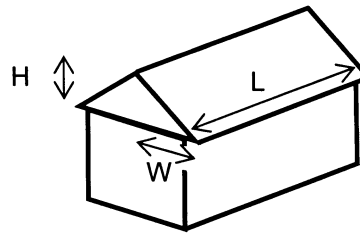
Gutters should be installed so that the gutter falls towards the outlet at not less than 2.5mm/m (1 in 400), and that a single run does not exceed 10m. The presence of corners in the gutter reduces capacity. BSEN12056-3:2000 recommends that the capacity of the gutter be reduced by 15%.

Catchment area

BSEN12056-3:2000 requires that wind driven

rain is taken into account when considering the effective catchment area. The standard assumes that rain falls at an angle of 2 units vertical to 1 unit horizontal, which means that half any vertical surface must be taken into account in calculations.

For a conventional building this means that the effective area is calculated from



$$\text{Area (m}^2\text{)} = L \times (W + H/2)$$

where,

L = Roof length in metres

W = Eaves to ridge width in metres

H = Eaves to ridge height in metres

$$\text{Flow rate (l/s)} = \text{Area} \times \text{rainfall intensity}$$

Gutter capacities

Gutter	Downpipes									
	75mm		87mm		100mm		111mm		120mm	
R100	1.64	0.82	1.64	0.82	-	-	-	-	-	-
R125	1.97	1.19	2.38	1.19	2.38	1.19	-	-	-	-
R150	-	-	2.93	2.16	4.25	2.16	4.32	2.16	4.32	2.16
R190	-	-	-	-	4.25	4.25	-	-	6.91	4.57
RER	-	-	3.18	3.05	3.29	3.05	3.62	3.05	-	-

Centre outlet capacity (l/s)

End outlet capacity (l/s)

Note:

The above figures are to BSEN12056-3:2000 and assume that the gutter is not longer than 50 times the gutter depth and that the hole in the gutter is at least the same size as the downpipe. Calculations assume that gutter is laid level, laying at recommended fall will increase capacity slightly. For complex roofs please refer to BSEN12056-3:2000, or contact Lindab.

More Complex Gutter Design