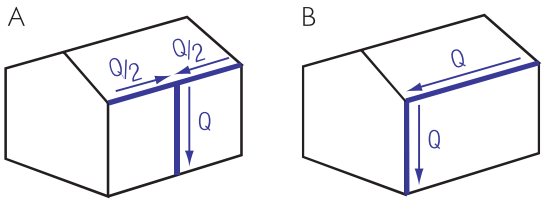
Flow Calculations

1. Design capacities calculated in accordance with BS 6367.

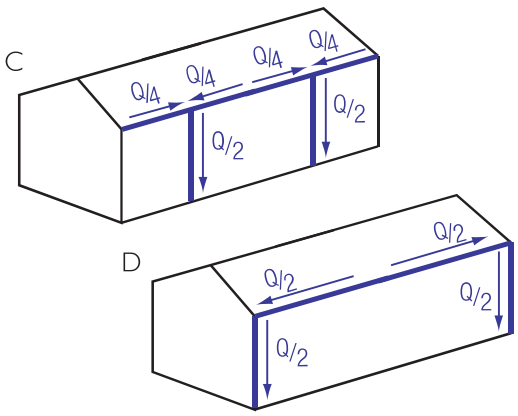
2. Distance between stop end and outlet should not exceed 50 x depth of gutter, and distance between outlets should not exceed 100 x depth of gutter.

3. Attention is drawn to para 8.3.2 and Fig.3 of the above BS Code of Practise: i.e. careful placing of outlets enables smallest practicable gutter sizes to be used.

   For the same total flow (Q), the gutter in Fig.A requires half the capacity of the gutter in Fig.B. Outlet capacities remain the same.



   Similarly:
   For the same total flow (Q), the gutter in Fig.C requires half the capacity of the gutter in Fig.D. Outlet capacities remain the same.



4. Where the length (Lg) of an eaves gutter is more than 50 times its overall depth (d) the following reduction factors should be applied.

Lg/d	Reduction Factor
50	1.0
100	0.93
150	0.86
200	0.80

   Lg = either the distance between stop end and outlet, or half of the distance between two outlets.

5. Where a corner is near to an outlet, a further reduction factor should be applied.

   Less than 2m from outlet:
   reduction factor = 0.8
   Between 2m and 4m from outlet:
   reduction factor = 0.9

6. Apparent anomalies can occur in the capacities chart as discharge characteristics change from 'weir' to 'orifice' type.

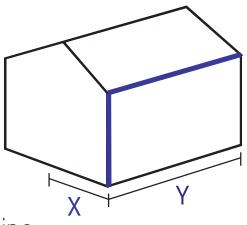
Fixing Advice:

Designs are based on rainfall rate of 79mm/hr.
Therefore: RUN-OFF RATE (l/s)
= EFFECTIVE AREA m^2 x 0.022

Effective roof areas can be calculated as follows (from Building Regulations):

Type of Surface	Design area (m^2)
Flat Roof	Plan Area of Relevant Proportion
30° Pitch Roof	Plan Area of Relevant Proportion x 1.29
45° Pitch Roof	Plan Area of Relevant Proportion x 1.50
60° Pitch Roof	Plan Area of Relevant Proportion x 1.87

Simple Example
X = 5m, Y = 10m
Angle of roof 30°



System required:
Moulded Ogee with round pipe.
Design Area ('Effective Area') = 5x10 x1.29 = 64.5m^2
Run Off = 64.5m^2 x 0.022 l/s per m^2 = 1.41 l/s

From chart (page 38), 125 x 100 gutter with 76 Ø downpipe appears suitable, but check:

$\frac{Lg}{d} = \frac{10}{0.1} = 100$ therefore reduction factor = 0.93

Gutter capacity x reduction factor = 2.84 x 0.93 = 2.64l/s, therefore the proposed system is suitable.