

Enclosure Construction

Blakley products are often installed in harsh environments. Even our standard enclosures are considered “heavy duty” and we have designed special enclosures to operate for extended periods in some of the most hostile conditions found in the UK and around the world. Although the design of our products depends on many factors, the following is a guide to our general mechanical design philosophy.

Materials

Selection of material is clearly critical. Because our assemblies usually operate in arduous conditions, most are fabricated from mild steel or stainless steel, although we are able to fabricate lighter duty enclosures from aluminium and other materials. The choice of material is usually based on its hardness and the following is a comparison of materials using the Brinell scale:

5251 H22 Aluminium	-	56HB
Mild steel	-	120HB
304 stainless	-	200HB
316L stainless	-	217HB

Enclosures fabricated from mild steel are suitable for most applications but where there is a very high risk of mechanical damage we can fabricate enclosures from different grades of stainless. For lighter duty applications or where weight is a major consideration, aluminium or other material can be used. Stands and crash frames are also typically made from mild steel sheet, square tube, angle or channels, to suit the application.

The gauge of steel that we use depends on the overall specification of the assembly but the following is a guide to the typical thicknesses that we utilise.

Internal plates and bracketry	-	1.2 to 3.0mm sheet steel, as required
Smaller enclosures & cabinets, typically <0.3m ³	-	1.5mm sheet steel
Larger enclosures & cabinets, typically >0.3m ³	-	2.0mm sheet steel
Canopies & larger doors, typically >0.6m ²	-	2.5mm sheet steel
Heavy duty cabinets for very arduous environments	-	3.0mm sheet steel
Stands and bases for smaller MDAs, etc	-	Fabricated from 3.0mm sheet steel
Stands and bases for larger MDAs, etc	-	Welded from 40 x 40 or 50 x 50mm angle
Gland plates	-	2.0 to 3.0mm aluminium

For corrosive atmospheres we are able to manufacture enclosures from grade 304 stainless steel up to 2.5mm, or from grade 316 stainless for very aggressive or marine environments.

Construction

Most of our enclosures are of seam welded construction, with spot and stud welding used where appropriate. Extremely large assemblies can be supplied in sections for ease of transportation and they are designed to be bolted together on site, without compromising the IP rating.

Wherever possible, critical lifting points are “bolt-on”. Unlike welded-on fixings, the integrity of bolt-on fixings can be verified without destructive testing and they can be maintained in the field. Our MDA and TA Site Transformer lifting arrangements have been destructively Type Tested and a minimum 5:1 safety margin is applied to arrive at the certified safe working load. All eyebolts are certified to BS4278.

Gaskets

Gaskets are made from closed cell neoprene. On high integrity enclosures, one piece gaskets are used whenever practical.

Type Testing

Given the wide diversity of assemblies that we manufacture, not all designs are independently Type Tested. However, a wide range of Type Tests have been carried out in such areas as: IP ratings up to IP56; corrosion resistance; short-circuiting of busbar systems; mechanical strength; temperature rise. Please refer to separate Tech Data sheets on Enclosure Finishing and Ingress Protection (IP ratings).