

sapa:

A92 BR

Bullet resistant windows and doors





Architect: KBC, Belgium

A92 BR

Bullet resistant windows and doors

A92 BR is a thermally insulated, bullet resistant system for fixed vent, windows, inward and outward opening doors. The hollow front chamber offers the possibility to insert steel reinforcements. The system obtains the FB6(NS) classification in accordance with EN1522 standard.



Enhanced Safety

- The A92 BR is developed to add increased security to buildings such as banks, embassies and government buildings, police stations and firing ranges, courts and prisons, airports and congress centers, nightclubs, ...
- A92 BR is a robust system that will discourage even the most determined intruder.
- Bullet resistant threshold against deflection shots under the door leaf (option).
- The system contains special bullet proof steel to stop the round or to deflect the path of the round to avoid perforation of the rear face of the profile by the bullet or part of the bullet.
- The combination of multipoint locking, bullet proof safety glass and special hardware ensures a high resistance against forced entry. Internal tubular glazing beads prevent unclipping from the outside.
- Safety hardware: solid turning hardware for big vent weights (300 kg for doors).

A92 BR

Bullet resistant windows and doors

Besides steel armour inserts, the system also accommodates for tubular glazing beads, special locks, unique corner cleats, safety hardware and door sills to provide an effective protection against ballistic attack.

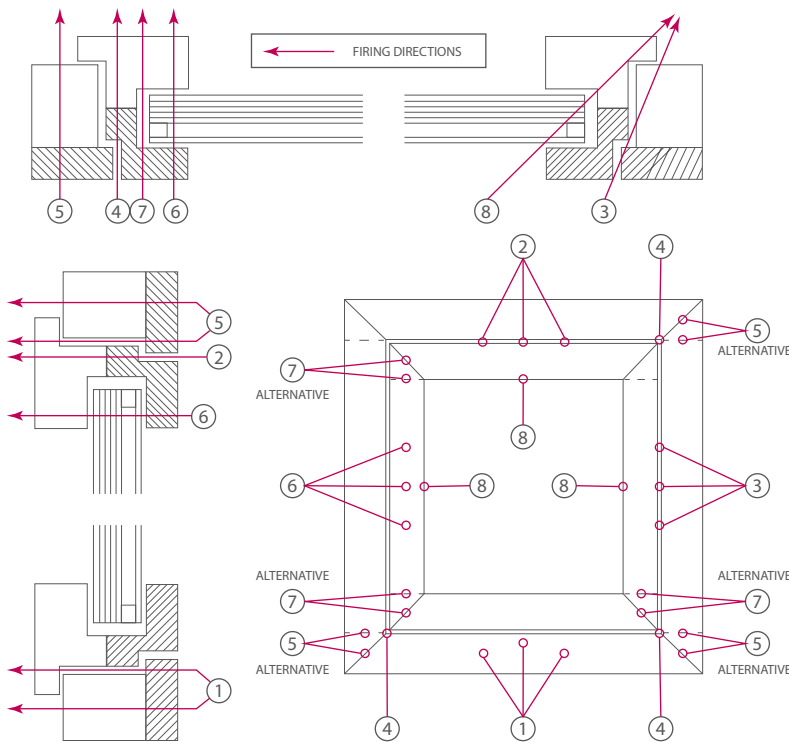
System Features

- A92 BR is the perfect solution for all bullet resistant applications for windows and doors with building depth of frame of 92 mm. The building depth of vent is 102 mm.
- The system accommodates glazing of 28 - 56 mm for frame and 40 - 67 mm for vent.
- The additional strength of a 3-chamber system with a building depth of 92 mm for the frame makes it possible to construct complex structures and large surfaces with a maximum of light penetration.
- Corner connection by specially designed solid adjustable corner cleats with fixing screws gives the construction greater strength, rigidity and stability.
- Different tubular glazing beads of 22 mm height and steps of 2.5 mm. Types: Classic (straight), Rustic (decorative) or Futuro (rounded).
- Acoustic gasket



A92 bullet resistant

Fully tested for angled shots



Angled shots

- A92 BR was tested officially, according to EN1523. These tests included both direct bullet impact (90 degree) and angled shots, in accordance with the test method in accredited test laboratories. Especially the successful test with angled shots are very important because of the weak points at the different seams between profile and glass.
- Aluminium extrusion profiles with two armour steel inserts designed to be bullet resistant to EN 1522: FB6(NS) classification

| Class EN1522 | Glass EN1063 | Type of weapon | Calibre | Bullet type | Bullet mass (g) | Test range (m) | Bullet velocity (m/s) |
|--------------|--------------|----------------|--------------|---------------|-----------------|----------------|-----------------------|
| FB1 | BR1 | Rifle | .22 LR | L/RN | 2.6 +/- 0,1 | 10 +/- 0,5 | 360 +/- 10 |
| FB2 | BR2 | Hand gun | 9 mm Luger | FJ(1)/RN/SC | 8.0 +/- 0,1 | 5 +/- 0,5 | 400 +/- 10 |
| FB3 | BR3 | Hand gun | 0.357 Magnum | FJ(1)/CB/SC | 10.2 +/- 0,1 | 5 +/- 0,5 | 430 +/- 10 |
| FB4 | BR4 | Hand gun | .357 Magnum | FJ(1)/CB/SC | 10.2 +/- 0,1 | 5 +/- 0,5 | 430 +/- 10 |
| | | | .44 Magnum | FJ(2)/FN/SC | 15.6 +/- 0,1 | 5 +/- 0,5 | 440 +/- 10 |
| FB5 | BR5 | Rifle | 5.56 x 45* | FJ(2)/PB/SCP1 | 4.0 +/- 0,1 | 10 +/- 0,5 | 950 +/- 10 |
| FB6 | BR6 | Rifle | 5.56 x 45* | FJ(2)/PB/SCP1 | 4.0 +/- 0,1 | 10 +/- 0,5 | 950 +/- 10 |
| | | | 7.62 x 51 | FJ(1)/PB/SC | 9.5 +/- 0,1 | 10 +/- 0,5 | 830 +/- 10 |
| FB7 | BR7 | Rifle | 7,62 x 51** | FJ(2)/PB/HC1 | 9,8 +/- 0,1 | 10 +/- 0,5 | 820 +/- 10 |

L: lead
 FJ: full metal jacket bullet
 PB: pointed bullet
 SC: soft core (lead)
 SCP1: soft core (lead) and steel penetrating (type SS109)
 HC1: steel hard core, mass (3.7 +/- 0.1) g, hardness more than 63 HRC

CB: coned bullet
 FN: flat nose
 RN: round nose

* To achieve the stated values for (5.56 x 45), the recommended barrel twist length equals (178 +/- 10) mm.

** To achieve the stated values for Class FB7, the recommended barrel twist length equals (254 +/- 10) mm.

note 1: When a shot is to be fired from a single point, the test range may be reduced to achieve the firing accuracy as defined in section 6 of EN 1523:1988. In this case it may not be possible to measure the velocity of the bullet.

note 2: To be classified FB4 or FB6, the specimen shall be tested with both calibers listed.



Finishes

- Over 400 powder coated paint colours in matt, gloss or satin
- Unique wood effect, textured and textured metallic ranges are available.
- Anodised finish is also an option
- Accessories can be supplied in corresponding colours to match the profiles.
- The polyamide thermal break allows bi-colour finishes. As a result, the exterior building requirements do not infringe the interior design requests.
- Our surface finishes meet the highest standards of Qualicoat or Qualanod

Project support & service

- SAPA's experienced Project Team will advise you on the best product solutions.
- We can help you with pricing, strength calculations, thermal simulations, etc..
- Specific project solutions can be developed.
- Samples, catalogues, technical specifications and digital drawings are available.

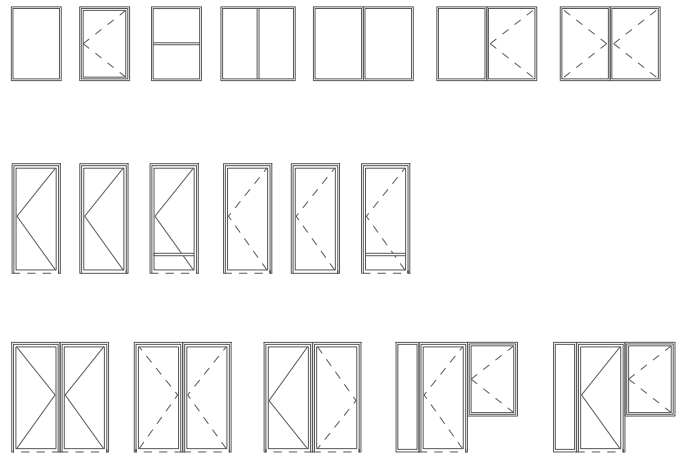
SapaLogic is a user-friendly calculation program for fast, efficient and complete calculation of windows, doors, structures, curtain walls and conservatories. SapaLogic is very much complete but modular still: the different versions can be adapted to your company's needs.

SapaThermic is detailed thermal simulation software for doors, windows, sliding systems and curtain walls. It can either be linked to SapaLogic or act as a stand-alone version.

A92 BR

Configurations and performances.

| Dimensions | |
|--|--|
| Min. sightline fixed frame | 63 mm |
| Min. sightline window with inward opening vent | 122 mm |
| Min. sightline inward opening door | 154 mm |
| Min. sightline outward opening door | 154 mm |
| Min. sightline transom | 98 mm |
| Profile depth frame / Building depth | 92 mm |
| Profile depth vent | 102 mm |
| Max. window (width x height) | 1400 x 1800 mm |
| Max. door (width x height) | 1200 x 2440 mm |
| Glazing | |
| Rebate height | 22 mm |
| Infill thickness fixed frame | 28 - 56 mm |
| Infill thickness vent frame (window) | 40 - 67 mm |
| Infill thickness vent frame (door) | 24 - 56 mm |
| Glazing method | dry glazed with EPDM gaskets |
| Performances | |
| Thermal insulation | $U_i = 2,49 \text{ W/m}^2\text{K}$ (EN ISO 10077-2) |
| Forced entry resistance (windows) | class 2 (ENV 1627 - 1630) |
| Forced entry resistance (doors) | class 4 (ENV 1627 - 1630) |



Bullet Resistance Performance

Tested element:

- fixed window
- connection between 2 frames
- turn window
- fixed window with T-connector
- inward opening door
- outward opening door

Used armour:

- Bullet resistant steel 2 x 4 mm

Achieved class for all:
FB6 NS and all preceding
classes



Building Systems keeps developing its systems and maintains the right to change this document as well as all technical data related without prior notice. Consult your local Building Systems office to receive the most recent information.

SAPA is one of the largest suppliers of aluminium building systems in Europe and is part of the Norwegian group Hydro. The core business is the development and distribution of aluminium profile systems for **windows, doors, conservatories, curtain walling, etc.** SAPA aims for well-developed systems and project solutions offering a tangible added value to fabricators, architects, investors and home-owners.

Aluminium is our business

Hydro Building Systems Belgium nv

- Industrielaan 17, BE-8810 Lichtervelde
T +32 (0)51 72 96 66 | F +32 (0)51 72 96 89
- Industriezone Roosveld 11, BE-3400 Landen
T +32 (0)11 69 03 11 | F +32 (0)11 83 20 04
- E info.hbs.be@hydro.com | www.sapabuildingsystem.com

part of

