



Ballistic Protected ISO Shipping Container Refuges

Optional blast protection to 100kg and 500kg of TNT

- Designed primarily for industrial, commercial and military environments.
- Maintains the external appearance of a conventional ISO Container
- Generally for external applications in the field or commercial areas
- Can also be used as office or site accommodation
- Doors can accommodate a wide range of commercial and specialist locking systems
- Available with windows, door vision panels, ballistic louvers and door viewers which are also ballistic rated
- Factory fitted air conditioning
- Factory fitted electrical pack, sockets and lighting
- Extensive range of ballistic certification



Special designs manufactured to customers' requirements.



Inner lobby area with ballistic louvers and door, also containing air conditioning and other plant and equipment



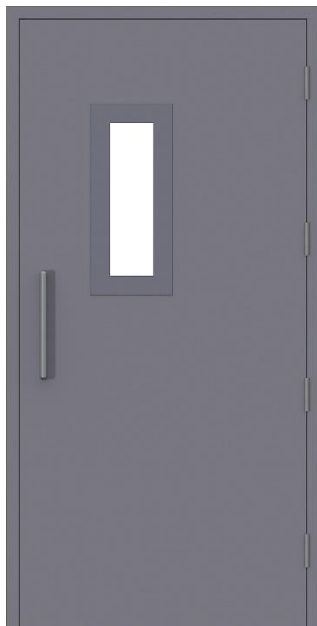
A high level of internal finish also allows the container to be used for accommodation or office space



Tested ballistic bullet louvers



Tested ballistic bullet door viewer peepholes



Main Body	
✓	Steel fabricated profiles – regular ISO Shipping Container
✓	Minimum frame depth/wall thickness 80mm
✓	Insulated as required
Doorframe	
✓	Ballistic fit out in steel fabricated profile
✓	Minimum frame depth/wall thickness 80mm plus insulation
Inner Ballistic Doorleaf(s)	
✓	Ranging in thickness from 44mm up to 50mm
✓	Multi layered ballistic construction
Hinges	
✓	Continuous Stainless Steel hinges
✓	Individual Stainless Steel Hinges
Suitable Locking Systems/applications	
✓	Multipoint surface mounted locking systems
✓	Multipoint concealed locking systems
✓	Single point surface mounted locking systems
✓	Single point morticed locking systems
✓	Suitable for access control
✓	Suitable for mechanical operation only
✓	Suitable for escape systems/panic exit only
✓	Suitable for combined a/c, mechanical override and escape
Power transfer to lock options	
✓	Concealed cable loop
✓	Surface mounted cable loop
Door closers	
✓	Suitable door closer type LCN 4041 and derivatives
✓	Alternative makes - Geze, Dorma and ASSA
✓	Automatic opening and closing systems - Besam, Dorma
Choice of Finishes	
✓	External – standard finish, internal choice of panels and colours
✓	Additional steelwork PPC finish/paint
✓	Floor - paint finish
Available sizes	
✓	From 10' to 40' standard ISO sizes
✓	Doors at either one end or both ends (tunnel containers)
✓	Oversize available and also special combined units



United Kingdom Ministry of Defence
approved test centres

Certified Ballistic Standards	
✓	BS EN1522/23 FB6 - 7.62 NATO
✓	BS EN1522/23 FB5 - 5.56 NATO
✓	Special - AK47 Stannag based
✓	BS EN1522/23 FB4 - .44
✓	BS EN1522/23 FB3 - .357
✓	NIJ 0108.01 IV
✓	NIJ 0108.01 III
✓	NIJ 0108.01 IIIA - .44
✓	NIJ 0108.01 IIIA - 9mm
✓	BS 5051 - G2/S86 - .357, .44, Shotgun
Compatible additional items	
✓	Ballistic door viewer to BS EN1063 BR3 - BR6 and NIJ IIIA - III
✓	Vision panels to BS EN1063 BR3 - BR6 and NIJ IIIA - III + AK47
✓	Ballistic Louver to BS EN 1522.23 FB3 - FB6 + AK47
Weights	
✓	7.62 protected ISO container, complete approx. 16,000 kgs single door
✓	Fabricated frame profiles approx. 15kg/m
✓	Doorleaves approx. 47 - 59kg/m2 for second door in tunnel container
Packing	
✓	Supplied as standard ISO container for transport
✓	Supplied in out of gauge/open top cargo for externally modified units



Blast tested products available
with polymer coatings for
added protection



Factory fitted electric pack
including air conditioning,
lighting, emergency lighting,
power sockets, connection into
site electrical supplies, GSM
repeaters, CCTV systems

History - How we began building our first Armoured Ballistic Containers

Building Defence Systems were approached by representatives from American Oil Companies in Iraq to provide safe refuge and storage/office containers for their operations within Iraq.

Stage 1 - Design Remit Listening to the Customer

- To be based upon a regular ISO shipping container
- Easily transportable between various locations
- No obvious visual elements that would suggest this to be anything but a regular shipping container
- To be used to protect personnel in remote areas of the Region and with the facility to also be used as office accommodation and for the secure storage of materials, plant and equipment

Stage 2 - Bomb Blast Testing and Ballistic Testing Demonstration:

We invited our customer and their technical team to attend a bomb blast test on a standard shipping container so that they could see for themselves what actually happens in the event of an explosion.



The customer could see how vulnerable a standard shipping container is and if we were to have had people occupying the container at that moment in time then the pressure inside the container would have been fatal. The walls were initially pushed into the container and then pulled back out as the external blast pressure fell away from the building.

We then invited our customer to witness a ballistic test, again at a recognised UK test centre so that they could see how various ammunition can easily penetrate unprotected shipping containers and just what is required to protect them.



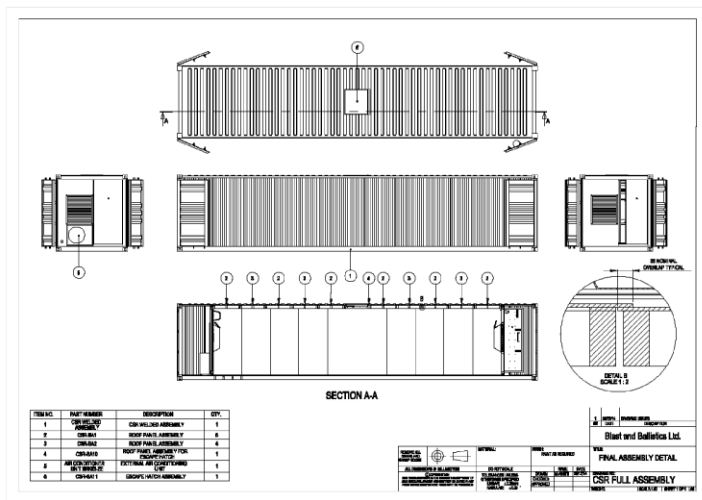
Stage 3 – Outline Design detail

Having listened to our customer and demonstrated the vulnerability of unprotected shipping containers we moved on to providing a specification and outline drawing for their consideration and approval.

Of specific note we had to include the following features:

- Full all around ballistic protection to protect against NATO 7.62 x 51 ammunition, NATO 5.56 ammunition and AK47 7.62 x 39 ammunition. In addition, the ballistic armour also had to provide protection from fragmentation explosions externally
- The ballistic protection had to be independently certified to a recognised European Standard which in this case was BS EN1522/23 FB5 and FB6 which also protected against high velocity hardened fragmentation and external blast loading
- The unit should have doors at both ends for increased user flexibility (it could later be subdivided in the middle and provide two separate independent areas for work and storage)
- Air conditioning was a very basic requirement but in addition the client wanted louvres and fans to circulate natural airflow at certain times rather than re circulated air
- The inclusion of louvres for this very specific application meant that they themselves had to be ballistic rated with the ability to return any inflammable liquids that someone may have tried to introduce if the unit was under assault
- In addition to the container doors there was to be lobby area at each end and that was secured by a high security ballistic doorset which also offered a secondary line of resistance against forced entry
- Insulation of all walls, floor and ceiling
- Power sockets so that the unit could be used for other things such as office space
- Lighting and also emergency lighting in case of power failure
- An internal Master Fusebox
- A simple means of connecting to external power sources via a Commando lead hidden beneath the container
- Non slip floor and wipe clean walls for ease of maintenance

Outline Drawing Details – Exploring options:



After several discussions and meetings with our client we arrived at final design for these units consisting of:

- 40 foot long ISO Containers
- Full ballistic protection
- Inner lobby doors
- Inner ballistic louvres
- Inner secondary high security ballistic doors
- Air circulating fans
- Fan plenums
- Air Conditioning
- Internal lights
- Internal emergency lights
- Power sockets
- Wipe clean walls and ceiling

Stage 4 - Manufacture:

Our client then instructed us to continue to manufacture



Stage 5 – Completion and Delivery





Available with ballistic tested windows for office accommodation and with internal shutters



Insulation and factory fitted electric pack including air conditioning and auxiliary fans



Also available with internal fixed or loose furniture for rapid deployment



Standard Product Details -

These can be changed and modified as required

20 Foot ISO Container SINGLE ENDED CONTAINERS

Ballistic Rating EN 1522/23 FB6

Item No.

- 1 Container - 20' ISO
- 2 Container doors at both ends
- 3 Ballistic protection all 6 sides
- 4 Inner Ballistic Security doors both ends
- 5 Recessed Lobby area at one end for services
- 6 Power Input access point
- 7 HVAC fitted onto lobby bulkhead
- 8 Insulation
- 9 Wall finish OSB painted RAL 7035
- 10 Floor finish anti slip epoxy paint black
- 11 Nuaire Positive Air Pressure Unit
- 12 Electrical distribution board
- 13 RCD's, Isolators, Limit Switches
- 14 2 x LED 5' twin tube lights (with one also being emergency)
- 15 4 x 13 amp sockets (double) and 1 x switched fuse spur PPV
- 16 Cable containment/trunking/SWA to outdoor HVAC
- 17 Earthing and certification
- 18 1 x Fujitsu ASYG 7.1 kw nominal split system HVAC
- 19 1 x refrigerant pipework installation
- 20 Suitable for temperatures up to 46 degrees

Options

- Upgrade internal wall finishes to MFC with trims
- Upgrade internal wall finishes to Platisol with trims
- Twin pack paint upgrade and remove decals to Container
- Blygold corrosion protect outdoor condenser

Standard Product Details -

These can be changed and modified as required

40 Foot ISO Container SINGLE ENDED CONTAINERS

Ballistic Rating EN 1522/23 FB6

Item No.

- 1 Container - 40' ISO
- 2 Container doors at both ends
- 3 Ballistic protection all 6 sides
- 4 Inner Ballistic Security doors both ends
- 5 Recessed Lobby area at one end for services
- 6 Power Input access point
- 7 HVAC fitted onto lobby bulkhead
- 8 Insulation
- 9 Wall finish OSB painted RAL 7035
- 10 Floor finish anti slip epoxy paint black
- 11 Nuaire Positive Air Pressure Unit
- 12 Electrical distribution board
- 13 RCD's, Isolators, Limit Switches
- 14 2 x LED 5' twin tube lights (with one also being emergency)
- 15 4 x 13 amp sockets (double) and 1 x switched fuse spur PPV
- 16 Cable containment/trunking/SWA to outdoor HVAC
- 17 Earthing and certification
- 18 1 x Fujitsu ASYG 7.1 kw nominal split system HVAC
- 19 1 x refrigerant pipework installation
- 20 Suitable for temperatures up to 46 degrees

Options

- Upgrade internal wall finishes to MFC with trims
- Upgrade internal wall finishes to Plastisol with trims
- Twin pack paint upgrade and remove decals to Container
- Blygold corrosion protect outdoor condenser

Standard Product Details -

These can be changed and modified as required

20 Foot ISO Container DOUBLE ENDED UNIT

Ballistic Rating EN 1522/23 FB6

Item No.

- 1 Container - 20' ISO
- 2 Container doors at both ends
- 3 Ballistic protection all 6 sides
- 4 Inner Ballistic Security doors both ends
- 5 Recessed Lobby area at one end for services
- 6 Power Input access point
- 7 HVAC fitted onto lobby bulkhead
- 8 Insulation
- 9 Wall finish OSB painted RAL 7035
- 10 Floor finish anti slip epoxy paint black
- 11 Nuaire Positive Air Pressure Unit
- 12 Electrical distribution board
- 13 RCD's, Isolators, Limit Switches
- 14 2 x LED 5' twin tube lights (with one also being emergency)
- 15 4 x 13 amp sockets (double) and 1 x switched fuse spur PPV
- 16 Cable containment/trunking/SWA to outdoor HVAC
- 17 Earthing and certification
- 18 1 x Fujitsu ASYG 7.1 kw nominal split system HVAC
- 19 1 x refrigerant pipework installation
- 20 Suitable for temperatures up to 46 degrees

Options

- Upgrade internal wall finishes to MFC with trims
- Upgrade internal wall finishes to Platisol with trims
- Twin pack paint upgrade and remove decals to Container
- Blygold corrosion protect outdoor condenser

Standard Product Details -

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40 Foot ISO Container DOUBLE ENDED UNIT

Ballistic Rating EN 1522/23 FB6

Item No.

- 1 Container - 40' ISO
- 2 Container doors at both ends
- 3 Ballistic protection all 6 sides
- 4 Inner Ballistic Security doors both ends
- 5 Recessed Lobby area at one end for services
- 6 Power Input access point
- 7 HVAC fitted onto lobby bulkhead
- 8 Insulation
- 9 Wall finish OSB painted RAL 7035
- 10 Floor finish anti slip epoxy paint black
- 11 Nuaire Positive Air Pressure Unit
- 12 Electrical distribution board
- 13 RCD's, Isolators, Limit Switches
- 14 2 x LED 5' twin tube lights (with one also being emergency)
- 15 4 x 13 amp sockets (double) and 1 x switched fuse spur PPV
- 16 Cable containment/trunking/SWA to outdoor HVAC
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- 18 1 x Fujitsu ASYG 7.1 kw nominal split system HVAC
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Options

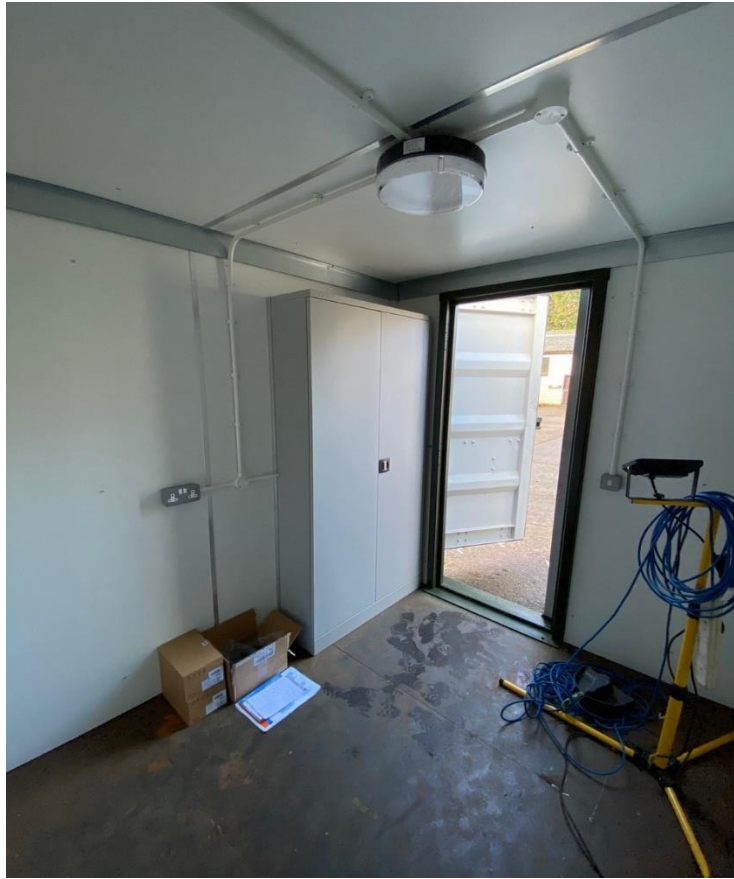
- Upgrade internal wall finishes to MFC with trims
- Upgrade internal wall finishes to Plastisol with trims
- Twin pack paint upgrade and remove decals to Container
- Blygold corrosion protect outdoor condenser



Ballistic Protected 10' ISO Shipping Container Refuges

- Designed primarily for industrial, commercial and military environments.
- Maintains the external appearance of a conventional ISO Container
- Generally for external applications in the field or commercial areas
- Can also be used as office or site accommodation
- Doors can accommodate a wide range of commercial and specialist locking systems
- Also available with windows, door vision panels, ballistic louvers and door viewers which are also ballistic rated
- Factory fitted air conditioning
- Factory fitted electrical pack, sockets and lighting
- Extensive range of ballistic certification





Factory production – showing internal lighting and wipe clean wall finishes



Emergency power back up including Lithium Battery

Main Body	
✓	Steel fabricated profiles – regular 10' ISO Shipping Container
✓	Minimum frame depth/wall thickness 80mm
✓	Insulated as required
Doorframe	
✓	Ballistic fit out in steel fabricated profile
✓	Minimum frame depth/wall thickness 80mm plus insulation
Inner Ballistic Doorleaf(s)	
✓	Ranging in thickness from 44mm up to 50mm
✓	Multi layered ballistic construction
Hinges	
✓	Continuous Stainless Steel hinges
✓	Individual Stainless Steel Hinges
Suitable Locking Systems/applications	
✓	Multipoint surface mounted locking systems
✓	Multipoint concealed locking systems
✓	Single point surface mounted locking systems
✓	Single point morticed locking systems
✓	Suitable for access control
✓	Suitable for mechanical operation only
✓	Suitable for escape systems/panic exit only
✓	Suitable for combined a/c, mechanical override and escape
Power transfer to lock options	
✓	Concealed cable loop
✓	Surface mounted cable loop
Door closers	
✓	Suitable door closer type LCN 4041 and derivatives
✓	Alternative makes - Geze, Dorma and ASSA
✓	Automatic opening and closing systems - Besam, Dorma
Choice of Finishes	
✓	External – standard finish, internal choice of panels and colours
✓	Additional steelwork PPC finish/paint
✓	Floor - paint finish
Available sizes	
✓	10' standard ISO sizes
✓	Doors at one end
✓	Oversize available and also special combined units



United Kingdom Ministry of Defence
approved test centres

Certified Ballistic Standards	
✓	BS EN1522/23 FB6 - 7.62 NATO
✓	BS EN1522/23 FB5 - 5.56 NATO
✓	Special - AK47 Stannag based
✓	BS EN1522/23 FB4 - .44
✓	BS EN1522/23 FB3 - .357
✓	NIJ 0108.01 IV
✓	NIJ 0108.01 III
✓	NIJ 0108.01 IIIA - .44
✓	NIJ 0108.01 IIIA - 9mm
✓	BS 5051 - G2/S86 - .357, .44, Shotgun
Compatible additional items - optional	
✓	Ballistic door viewer to BS EN1063 BR3 - BR6 and NIJ IIIA - III
✓	Vision panels to BS EN1063 BR3 - BR6 and NIJ IIIA - III + AK47
✓	Ballistic Louver to BS EN 1522.23 FB3 - FB6 + AK47
Weights	
✓	7.62 protected ISO container, complete approx. 5,000 kgs single door
✓	Fabricated frame profiles approx. 15kg/m
✓	Doorleaves approx. 47 - 59kg/m2 for second door in tunnel container
Packing	
✓	Supplied as standard ISO container for transport
✓	Ex works UK customer to collect



Factory fitted electric pack including air conditioning, lighting, emergency lighting, power sockets



History - How we began building our first Armoured Ballistic Containers

Blast and Ballistics Limited were approached by representatives from American Oil Companies in Iraq to provide safe refuge and storage/office containers for their operations within Iraq.

Stage 1 - Design Remit Listening to the Customer

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The customer could see how vulnerable a standard shipping container is and if we were to have had people occupying the container at that moment in time then the pressure inside the container would have been fatal. The walls were initially pushed into the container and then pulled back out as the external blast pressure fell away from the building.



Extensive testing of ballistic armour and door products at recognised Ministry of Defence Test Centres

Stage 2 – Outline Design detail

Having listened to our customer and demonstrated the vulnerability of unprotected shipping containers we moved on to providing a specification and outline drawing for their consideration and approval including:

- Full all around ballistic protection to protect against NATO 7.62 x 51 ammunition, NATO 5.56 ammunition and AK47 7.62 x 39 ammunition. In addition, the ballistic armour also had to provide protection from fragmentation explosions externally
- The ballistic protection had to be independently certified to a recognised European Standard which in this case was BS EN1522/23 FB5 and FB6 which also protected against high velocity hardened fragmentation and external blast loading
- Air conditioning was a very basic requirement but in addition the client wanted louvres and fans to circulate natural airflow at certain times rather than re circulated air
- In addition to the container doors there was to be an inner high security ballistic doorset
- Insulation of all walls, floor and ceiling
- Power sockets so that the unit could be used for other things such as office space
- Lighting and also emergency lighting in case of power failure
- An internal Master Fusebox, emergency lighting, power sockets, wipe clean walls and ceiling
- A simple means of connecting to external power sources via a Commando lead hidden beneath the container
- Non slip floor and wipe clean walls for ease of maintenance



Wipe clean walls and ceiling finishes



**Inner High Security
Ballistic Doorset**

Final Specification:

- 10' ISO container (New but used once on way to UK as they do not like to ship anything empty from China)
- Full ballistic spec to NATO 7.62 NS as detailed
- Full protection to all 6 sides
- Inner security ballistic rated door and locking (all armoured products will withstand grenade as requested)
- a/c – type TBA
- Electrical pack (sockets/lights)
- Emergency power back up including Lithium batteries
- Fully lined internally
- Floor coating
- Two bolts to the inside of the outer container doors operated from inside during entry
- Bench/benches/table as required

Note – for these bolts to operate, remove the keeps that secure the outer doors on the outside on delivery so that it will close from inside and that also means that they cannot be locked from outside