Military

Custom-designed defence solutions

BMT GROUP

Official Representative Of

RUBB Military Buildings

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Rubb's military hangars and shelters are designed to be rapidly deployed and quickly constructed anywhere in the world.

Rubb's Expeditionary Forces Aircraft Shelter System (EFASS) is designed to be rapidly located to support military operations. Rubb fabric military buildings are reliable, durable and field maintainable engineered structures, suitable for areas of difficult terrain and harsh climatic conditions. Demountable, relocatable and reusable, EFASS aircraft hangars, sunshades, shelters, and warehouses are available in three spans with multiple door options.

With unmatched relocatable fabric structures in action across the globe, Rubb has the ideal solution to military and defence application requirements. With a proven track record, clients include the UK, USA, UAE, Lithuanian, and Canadian forces. Rubb has been meeting the needs of the UK Ministry of Defence for more than 30 years. Rubb has the expertise and facilities to custom-make an extensive range of military hangars, buildings, shelters, and sunshades to individual specifications.

Advantages

Low maintenance and costs

Our high-quality membrane materials and post-production galvanized welded frames deliver durability over time, making the cost of maintaining Rubb buildings more economical compared to conventional structures.

Efficient use of space

The truss frame provides clear span space to accommodate a wide variety of rotary and fixed wing aircraft and land vehicles. Fully demountable for future storage, relocation and construction cycles.

Packing and transport

The EFASS range has been designed with precise packing, repacking, and fast track transportation in mind. Each Rubb hangar is supplied with its own 20ft ISO containers.

Multiple door options

Rubb offers a variety of hangar doors. They can be selected and designed to suit many size and opening requirements. This flexibility ensures that our clients get the best option to suit their operational needs.

Crane maintenance system

The integral roof mounted crane system provides clients with the facility to maintain vehicles and aircraft. The crane provides optimal operational capability (1000kg, 1500kg, and 2000kg SWLs available).

Heating, ventilation, and air conditioning

It is possible to heat, ventilate, dehumidify or air condition these hangars. Custom-designed HVAC systems help create an ideal internal working environment for all military requirements.

Hangar refurbishment

Rubb provides a refurbishing and recertifying service for military organisations. Rubb completes a full inspection, repairing and servicing structures as required, then repacking items ready to be deployed.

Adaptable solutions

Rubb structures can be adapted to suit the requirements of most military equipment and operations. From barracks gyms to asset shelters on wheels, Rubb has it covered.

Construction training

Training advisers and custom designed courses are available to fully instruct clients on unpacking, erecting, using, dismantling, and repacking Rubb EFASS military structures. Rubb can supply an erection adviser to work alongside your own labour force.

Rubb support

The Rubb team is on hand to answer all your questions and offer advice by email and phone from initial contact to quotation, installation, and when in theatre. We are here to help you meet your goals in the field.

Features

Framework

The backbone of Rubb's Expeditionary Forces Aircraft Shelter System is a well engineered aluminium framing system. The 6082 T6 structural aluminium is annodized black and connecting steel components are hot dip galvanized to protect them from corrosion.

High-quality membrane

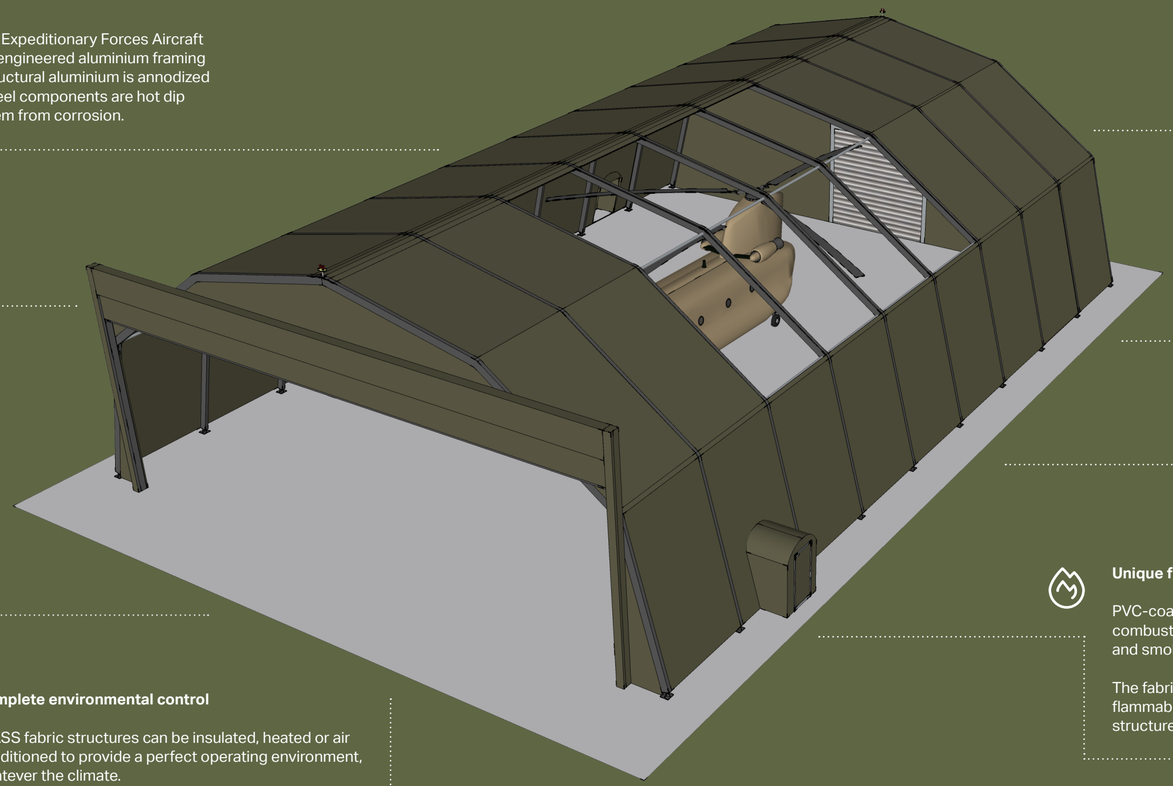
Double skin and insulation has been specifically designed to provide improved conditions for front-line aircraft hangarage and vehicle maintenance workshops, in both hot and cold conditions.

Code-compliance

Withstands wind/snow loads to UK Defence Standards up to VE 41.6m per second (wind speed); 100kg per m² (snow load).

Climate endurance

The building is designed to function in the climate ranges of A1 to C3 as defined in DEF STAN 00-35 Part 4. This indicates design temperatures of +49c to -51c.



Complete environmental control

EFASS fabric structures can be insulated, heated or air conditioned to provide a perfect operating environment, whatever the climate.

Insulation options

Rubb offers double skin insulated fabric membranes, which provide comfortable working conditions, in both hot and cold conditions. The outer skin, insulation and inner skin are all welded into one Keder track.

Foundations

The Rubb EFASS is supplied with its own integral foundation arrangement with various adaptations and accessories to securely anchor the structure to the ground.

Suitable for difficult sites

The flexible membrane and design of the Rubb EFASS allows installation on uneven or sloping sites. The buildings will also accept moderate differential settlement of the foundations.

Unique fire safety features

PVC-coated polyester membrane will not propagate flame or sustain combustion when exposed to a fire. The structure is self-venting, allowing heat and smoke to escape.

The fabric has been tested to meet British and NFPA standards for the flammability of textile fabrics, the ignitability of fabrics used for large tent structures and surface spread of flame, BS476 Part 7.

Aircraft hangars

The EFASS military aircraft hangar is mission ready to support defence operations out in the field. These defence standard military aircraft hangars can accommodate a wide variety of fixed wing aircraft and rotary wing aircraft for storage, maintenance and swift deployment.

The 20.4m Rubb Military aircraft hangar was the first of the EFASS aircraft hangar range of soft walled temporary buildings to be specifically designed to comply with a very stringent military compliance matrix from the UK Royal Air Force.

The 25m EFASS is currently the largest military hangar in the EFASS range, originally designed for maintenance of the MH-47 Chinook military helicopter.

EFASS aircraft hangars are available in various span widths including 11.1m, 20.4m and 25m, with various door options to accommodate aircraft storage and maintenance operations. Typical lengths range from 28m to 40m and can be extended or shortened by 4m bays to any length.

EFASS hangars can be packed into 20ft ISO shipping containers for delivery. The standard 20.4m x 30m building with Trident Doors at each gable end, together with electrics, packs into just one 6.1m container (packed container in this case weighs 13,610kg). Containers are packed to military JADTEU standards (Joint Air Delivery Test and Evaluation Unit).

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RPAS hangars

The Rubb Military RPAS storage and maintenance hangars are designed with a lower internal volume. This makes the hangars much more cost-effective to power (electrics, HVAC). All RPAS hangars are designed to comply with military standard loadings.

Research and Development came into play to create the 'RPAS POD', when the UK MoD requested Rubb create a lower span profile to accommodate their requirements.

EFASS RPAS hangars are available in various span widths including 11.1m, 20.4m and 25m. Typical lengths range from 24m to 40m and are extendable by 4m bays to any length. Heli-Door solutions are available for ease of access and egress.

RPAS hangars include maintenance and workshops areas as well as equipment and tool storage areas.

Military sunshades

The EFASS aircraft hangar has been adapted into a functional aircraft sunshade to protect vital aircraft and crews from searing temperatures and powerful UV rays.

Sunshades can be easily shortened, extended or modified into a hangar or warehouse.

Innovation and Rubb's commitment to Research and Development led to the creation of the EFASS sunshade after listening to feedback from military personnel.

Sunshade structures feature completely open gable ends and a large area of shade for operational aircraft and vehicles.

EFASS sunshades are available in various span widths including 11.1m, 20.4m and 25m. Typical lengths range from 24m to 32m and are extendable by 4m bays to any length.

Warehouses & workshops

EFASS warehouses and workshops can be easily configured to suit individual storage needs. The system provides an ideal warehouse space with large internal dimensions that can be shortened, extended or modified into a sunshade or hangar to meet future requirements.

Insulated fabric options provide a rapidly deployable temperature controlled facility, also ideal for manufacturing and repair work in theatre.

EFASS vehicle shelters are available in various span widths including 11.1m, 20.4m and 25m. Typical lengths range from 28m to 100m and are extendable by 4m bays. Door options and door combinations are available featuring Heli-Door, Trident or Roller Shutter solutions.

Structures can be built quickly without additional mechanical plant. Fast installation can be led by Rubb, with your own team. The most recent 25m x 100m warehouse was erected in just 13 days by a team of 11 personnel.

Field infrastructure

Rubb's rapid deployment structures can be selected to create your custom field infrastructure in theatre or at bases around the world.

EFASS military buildings can be joined together to form a network of shelter solutions to protect personnel, aircraft, vehicles, operations and equipment from the elements.

Small Rapid Deployment Shelters (RDS) are based on standard widths (6m and 9.1m) and can be supplied by any length. They can be interlinked to make field headquarter complexes.

Further protection for the RDS range can be provided by applying sun screen covers. These covers prevent the military shelter from overheating in very hot climates.

Visit www.rubbuk.com or contact the team for further information on the Rubb Rapid Deployment Shelter.

Accessories

Rubb has developed a range of accessories for our fabric hangar systems based on feedback from end users, military experts, and procurement officers.

Electrics

Supplied in kit form with plug and play connections. Each kit is supplied with a power distribution panel designed to accommodate all accessories including main lighting, emergency lighting and remote power sockets.

Tool kit

A construction and installation tool kit can be provided for assembling and dismantling all Rubb EFASS military hangars.

Erection kit

A full hangar erection kit includes all the necessary equipment to erect and dismantle the structure without the need of mechanical plant (crane or forklift truck).

HVAC

The EFASS range has been designed to allow the user to heat, ventilate, dehumidify or air condition the hangar. Structures are supplied with the duct inlet points ready for HVAC unit attachment.

Maintenance crane

The roof mounted crane was developed around military helicopter maintenance crews' requirements (11.1m: 1000kg SWL, 20.4m: 1500kg SWL and 25m: 2000kg SWL).

Support

Rubb personnel are on hand to provide support, from initial contact to quotation, installation, and beyond. We are here to help you meet your goals in the field.

Training

Advisers and custom designed courses are available to fully instruct clients and end users on unpacking, erecting, using, dismantling and repacking Rubb EFASS military structures.

Field support

Rubb can supply personnel in the field. We are also available to answer your questions and offer advice by email and telephone. Formal documentation and spares can be issued from our office if required. All requests will receive a response within 24 hours.

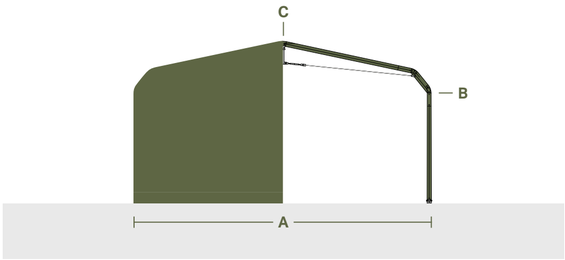
Refurbishment

Rubb provides a refurbishing and recertifying service for military organisations. Rubb completes a full inspection, repairing and servicing structures as required, then repacking items ready to be deployed.

Erection supervisor

Rubb can supply an erection adviser to work alongside your own labour force. With previous build locations in Iraq, Afghanistan, USA, and the Seychelles, Rubb has a proven and reliable track record of providing the necessary training or erection service anywhere in the world.

Specification



11.1m EFASS

This is the smallest military structure span in the EFASS range, designed to accommodate light aircraft, helicopters and operate as a smaller storage centre or workshop.

The 11.1m EFASS light aircraft, vehicle and maintenance hangar is constructed using the same roof and leg elements as the 20.4m span Rubb Military building and built to the same high specifications.

Snow
100kg m²

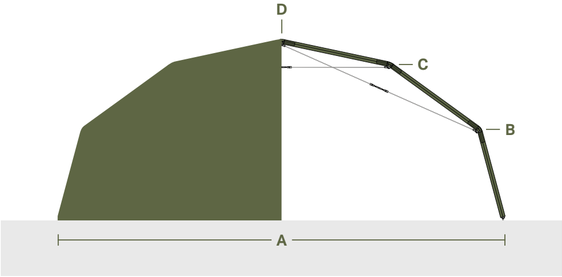
Wind
VE 40m/s

Crane
1000kg SWL

Span (A)
11100mm

Leg (B)
4343mm

Apex (C)
6100mm



20.4m EFASS

The 20.4m EFASS rapid erect hangar is mission ready to support military operations out in the field. One standard 30m long hangar can be packed into one 20ft ISO container.

This deployable military aircraft hangar was the first of the EFASS aircraft hangar range of soft walled temporary buildings to be specifically designed to comply with a very stringent military compliance matrix from the Royal Air Force.

Snow
100kg m²

Wind
VE 40m/s

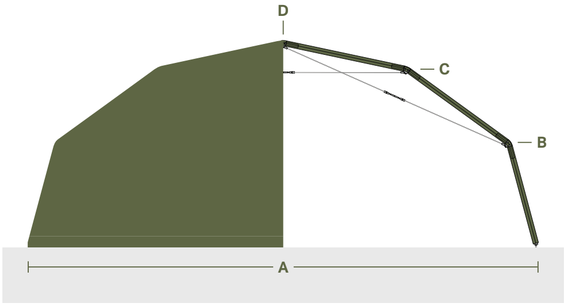
Crane
1500kg SWL

Span (A)
20400mm

Leg (B)
4292mm

Eaves (C)
7291mm

Apex (D)
8384mm



25m EFASS

The 25m EFASS is currently the largest military helicopter hangar in the EFASS range, specifically designed for maintenance and storage of the MH-47 Chinook military helicopter.

A 25m span x 36m long EFASS hangar can be packed into two 20ft ISO shipping containers and constructed in less than four days. This hangar is capable of supporting a 2000kg integral roof mounted crane system.

Snow
100kg m²

Wind
VE 41.6m/s

Crane
2000kg SWL

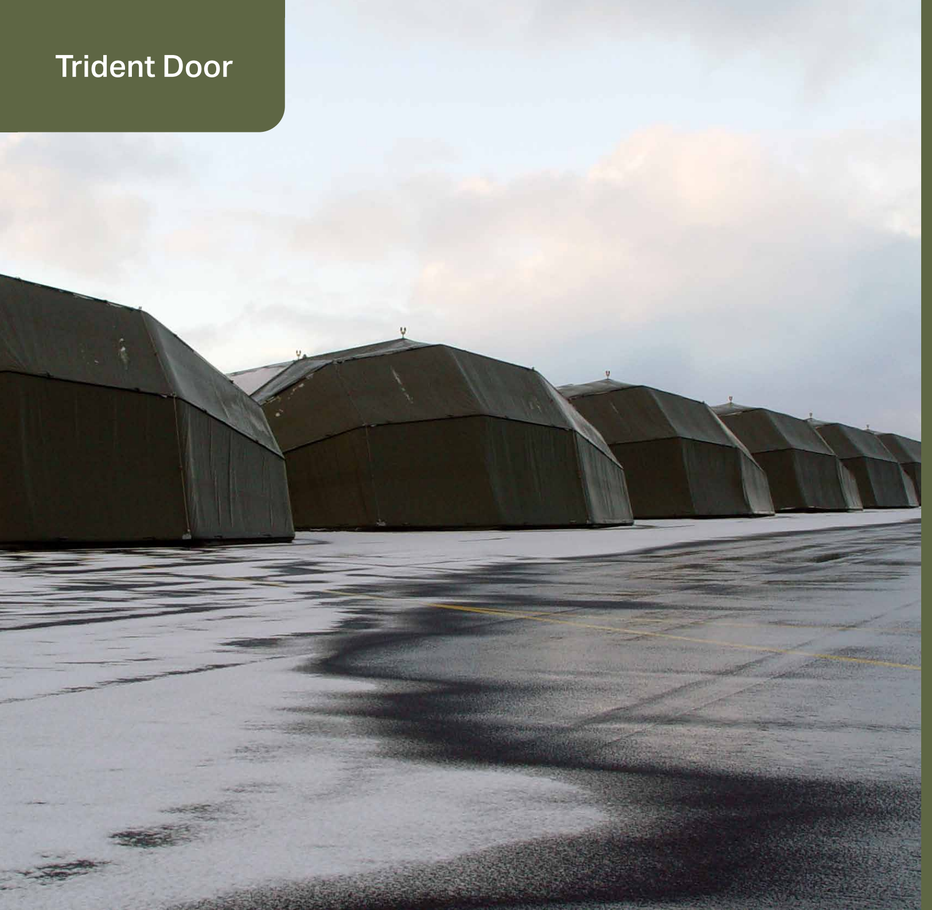
Span (A)
25000mm

Leg (B)
5976mm

Eaves (C)
9561mm

Apex (D)
10822mm

Trident Door



Materials

The Trident Door is constructed using lightweight standard EFASS aluminium roof sections and features high quality PVC fabric folding panels.

Installation

Like the EFASS structure, the Trident Door is constructed on the ground, then lifted into place. No additional mechanical plant is needed.

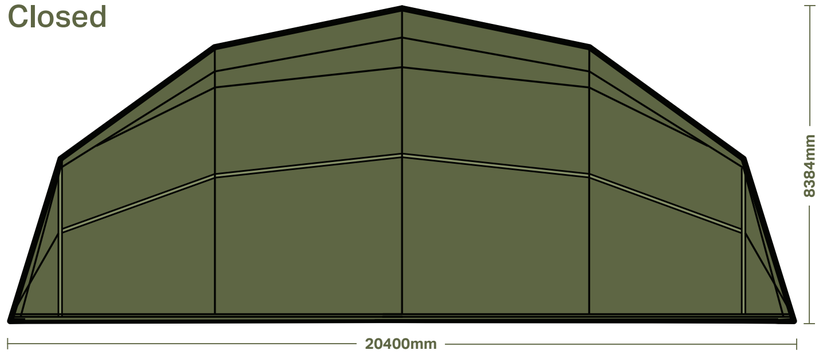
Insulation

The EFASS Trident Door can be insulated using the same double skin technology as the hangar covering membrane.

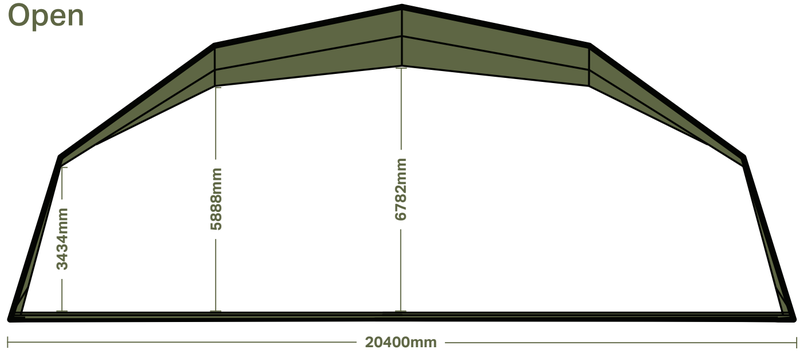
Electrical specification

The EFASS Trident Door is electrically operated using high quality, military specified 'plug and play' wiring and components.

Closed



Open



The Trident Door is exclusive to the 20.4m EFASS.

The EFASS Trident full opening door system supports rapid aircraft deployment in theatre and at military bases around the world.

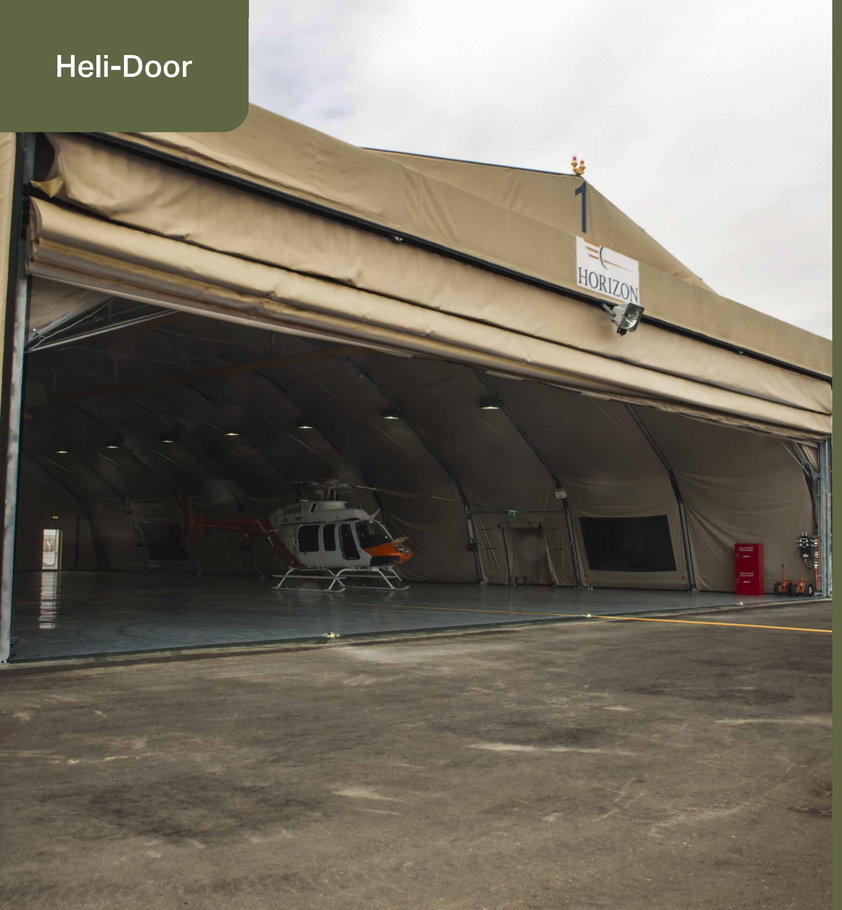
Designed specifically for the 20.4m span EFASS, this full end-opening aircraft hangar door helps speed up aircraft response times.

Three framed PVC panels are hinged at the base of the hangar and operate via a motorised folding mechanism.

Fully opening Trident Doors at both ends of the building transforms the hangar into an aircraft sunshade.

Trident Door clear opening dimensions are illustrated to the left.

Heli-Door



Materials

The Heli-Door is constructed using lightweight standard EFASS aluminium roof sections and features high-quality PVC fabric folding panels.

Standards

The Rubb Heli-Door system is designed to European, CE-Marked standards and can be purchased as a stand alone product for military and commercial markets.

Design

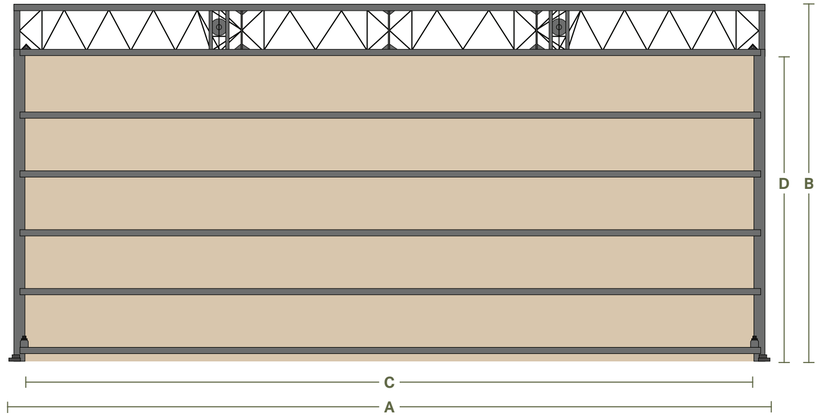
Using the same aluminium sections from the EFASS military structure, the Heli-Door is adaptable and interchangeable to suit changing requirements.

Insulation

The EFASS Heli-Door can be insulated using the same double skin technology as the hangar covering membrane.

Electrical specification

The EFASS Heli-Door is electrically operated using high quality, military specified 'plug and play' wiring and components.



Heli-Door type	Door structure sizes		Clear opening sizes	
	Width (A)	Height (B)	Width (C)	Height (D)
11.1m EFASS Heli-Door	10.1m	4.67m	9.8m	4m
20.4m EFASS Heli-Door 1	12.8m	5.9m	12.5m	4.5m
20.4m EFASS Heli-Door 2	18.1m	7.7m	17.7m	5.8m
25m EFASS Heli-Door 1	18.75m	8.8m	18.3m	6.5m
25m EFASS Heli-Door 2	21.7m	9.6m	21.3m	7m

Heli-Doors can be supplied in five sizes to suit your needs.

This door has been specifically designed and manufactured by Rubb for military and aerospace projects and provides a robust and reliable door system.

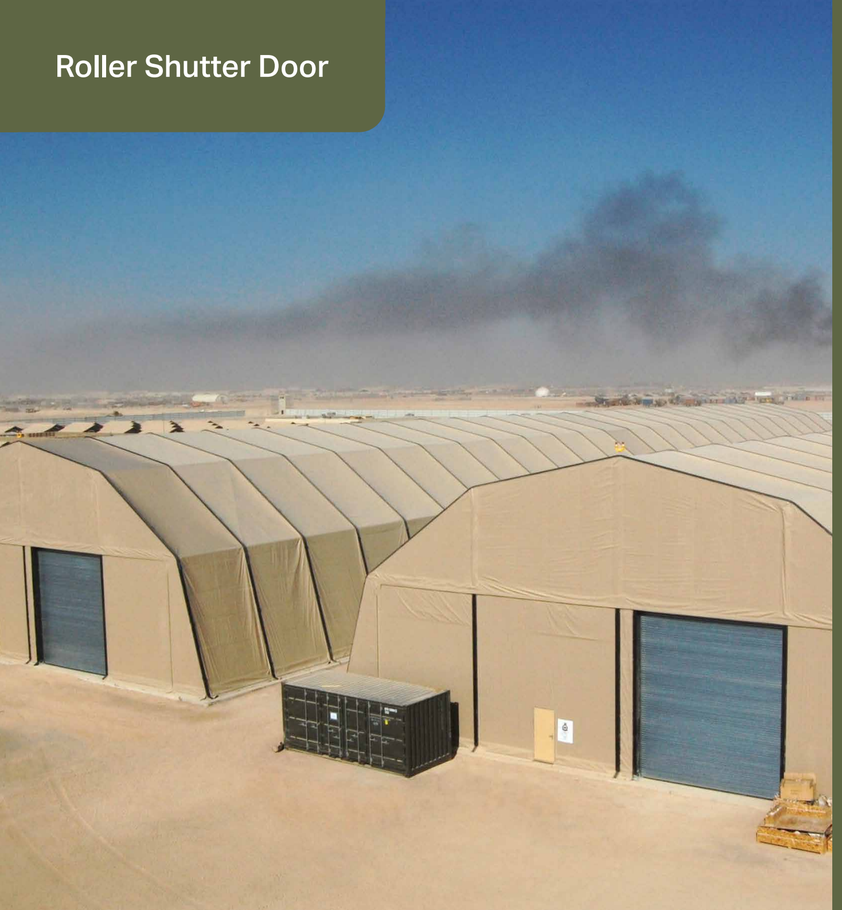
The EFASS helicopter hangar door systems are designed to be quickly constructed and used easily in the field to support all military operations.

This vertically folding door is electrically operated via two helical geared motors, with emergency hand operation capability if required.

The chart to the left shows the different specifications of Rubb Heli-Door systems.

Overall structure and clear opening sizes can be selected to suit operational needs.

Roller Shutter Door



Materials

The roller shutter doors feature standard parts and galvanized steel slats and are easily maintainable.

Operation

Roller shutter doors can be either electrically or manually operated.

Design

The EFASS roller shutter door options are quickly available as standard off-the-shelf items.

Installation

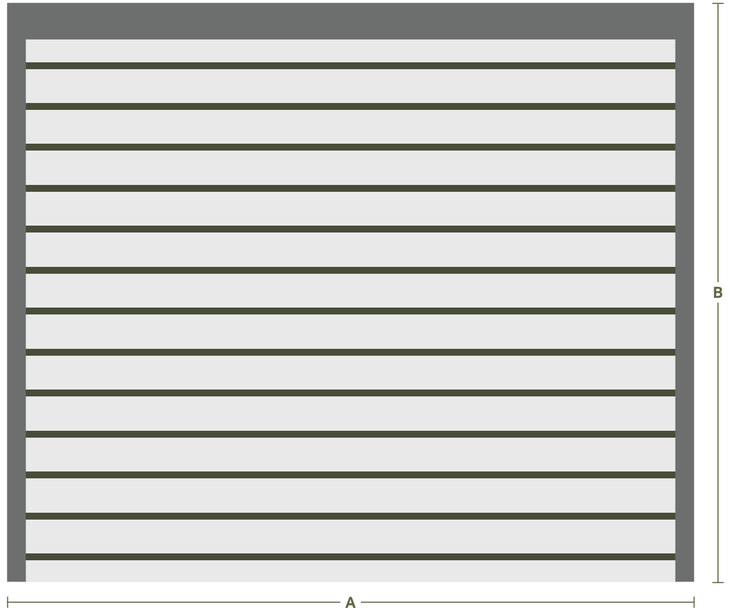
The roller shutter door is constructed on the floor with the gable end framework and is then lifted into place.

Retrofitting

Standard roller shutter doors can be fitted to any EFASS gable end.

Electrical specification

Electrically operated roller shutter doors can be connected to the EFASS hangar's main electrical system.



Roller shutter doors are available in six sizes to suit your requirements.

Standard roller shutter doors can be operated electrically or by hand. They are an ideal door solution for military storage buildings and logistical needs. Roller shutter door systems are designed to be fitted easily to EFASS military structures at bases and in theatre.

Roller Shutter Door	Clear opening sizes	
	Width (A)	Height (B)
Roller Shutter Door Size 1	3m	4.67m
Roller Shutter Door Size 2	5m	3.5m
Roller Shutter Door Size 3	5m	4m
Roller Shutter Door Size 4	5m	4.5m
Roller Shutter Door Size 5	5m	5m
Roller Shutter Door Size 6	5.1m	6m

ThermoHALL®

Rubb's insulated cladding system

Rubb's patented Thermohall® features a flexible insulated fabric system which offers major advantages over other insulating systems:

- Non-combustible glass wool is encapsulated in air and water tight pockets
- Insulation thickness from 50mm to 150mm
- No air gaps in the cladding, which reduces heat loss and helps eliminate condensation
- Buildings are fully relocatable

Development of Thermohall® started several years ago, with the goal of a new and eco-friendly insulation system. Thermohall® is now fully developed and patented. Thermohall® offers great energy savings and is environmentally friendly—both in fabrication and operation.

- Rubb uses a heavy-duty PVC fabric with a long, useful life and high density, non-combustible glass wool insulation
- All the materials are recyclable. Steel can be recycled through various means and PVC can be recycled through initiatives which are part our operational supply chain and environmental partnerships. The insulation material that Rubb uses is processed from recycled glass
- Rubb Thermohall® structures combine the best properties of both conventional buildings and fabric buildings, high thermal insulation and full relocatablity. All Thermohall® buildings can be delivered to suit our customers' insulation requirements

Thermohall® technical specification

Thickness	U Value (SI) W/m2K	R Value (US) ft-F-hr/BTU
50mm (2in)	0.67 W/m2K	R11
100mm (4in)	0.36 W/m2K	R19
150mm (6in)	0.25 W/m2K	R27

Outer layer

Flame retardant heavy-duty fabric

Inner layer

Self-cleaning PVC fabric

Core

High-density glass wool insulation

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