

OPERATION & MAINTENANCE MANUAL



SHELTERS, WALKWAYS & CYCLE PARKING





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Introduction

Broxap shelters, canopies, cycle parking and covered walkways have been supplied to designs that have been proven over years of development and installation. From 1st July bespoke canopies and walkways are CE marked in accordance with the recently introduced Construction Products Regulation (Execution Class EXC2).

Our structures are supplied in a base material of mild steel or aluminium with sections and grades of material being used that ensures they are fit for purpose for many years to come.

To aid in ensuring the maximum life can be realised with the structure, along with minimising the costs for major refurbishment, this manual has been created to assist in the ongoing maintenance requirements along with identifying important points that should be followed at all times.

Broxap are ISO9001 (Quality), ISO14001 (Environmental) and OHSAS18001 (Health and Safety) certified through the BSI.

These 3 standards have been utilised during the design, manufacture, processing and delivery of the product. Our commitment to providing a service of quality that takes into consideration the effects of the environment during its manufacture and life plus the health and safety of the Customers has been fully considered.

Other standards that have also been considered during product design and manufacture are:

- BS EN 1993-1-1:2005 (Euro code 3. Design of Steel Structures).
- BS EN 1090-1:2009+A1:2011 (Execution of Steel Structures & Aluminium Structures).
- BS EN ISO 3834-3:2005 (Quality Requirements for Fusion Welding of Metallic Materials).
- BS EN ISO 1461:2009 (Hot Dip Galvanized Coatings on Fabricated Iron & Steel Articles).
- BS EN ISO 12944-2:1998 (Paints & Varnishes – Corrosion Protection of Steel Structures by Protective Paint Systems).
- BS EN 13022-1:2006+A1:2010 (Glass in Buildings. Structural Sealant Glazing).

Health & Safety Information

The structure supplied has no specific operating instructions once it has been installed. However, there is a need for certain Health and Safety notes to be considered at all times during its use and ongoing maintenance.

These being:

- The roof of the structure should be considered as a fragile area, and at no time has it been designed to be weight-bearing or capable of supporting a person. Therefore, the loading of materials onto the roof or for a person to be climbing onto and walking across is strictly prohibited.
- Where there is PETg on the structure, this is capable of forming to the required basic installed shape. The material has a low impact resistance; however, the ongoing kicking of footballs against it, persons being pushed against or deliberately bouncing off it, or any other types of impact may cause either cracking or punched through holes. The edges of such damage would have a sharpness which would be consider similar to glass and may lead to injuries that would be associated with such. Therefore, when impacts are being witnessed, it is suggested that you advise the persons accordingly. Where damage has occurred, the area should be isolated from use, the PET removed in that area and a new piece sourced by contacting Broxap directly. Damage of this type is not accepted under the Broxap warranty.
- When routine maintenance is being undertaken there is a requirement for the customer to climb a ladder. Broxap identify that:- **It is the Customer's responsibility to ensure that at all times when working at height and by whatever method chosen, full care, responsibility, correct operation, training and supervision must be adhered to as a minimum.**
- Broxap cannot accept any responsibility for any damage or injury to persons or property as a result of not working in a safe and proper manner.
- Should any structural concerns, product failure, product quality or issues relating to ongoing maintenance and repair of the product be necessary, then it is strongly recommended that in the first instance contact is made directly with Broxap.

Materials & Processes

As the product is designed to utilise various customer requirements, the following is a list of materials and processes that could have been used during its processing:

Materials

- Mild steel in grades S235, S275 or S355
- Stainless Steel – Grade 304 or 316
- Extruded Aluminium
- Toughened or Laminated glass
- PETg / Multiwall sheeting
- Plastic / aluminium guttering and downpipes
- Wood Cladding
- Fixings in Grade 8.8 or 10.9 in steel or stainless steel
- Rivets and / or TekScrews
- Ground anchors – Sleeve or resin type
- Proprietary locking mechanisms on security gates when fitted

Processes used

- Bending, forming, fabrication and welding.
- Hot dip galvanizing
- Polyester powder coating
- Wet painting
- Staining of wood cladding

Cleaning, Maintenance & Repair

This section gives a generic overview of the inspection and cleaning regimes, solutions, methods and techniques which will preserve the aesthetic finish of the product.

Inspection & Cleaning

To maximise life expectancy the product should be visually inspected, on a regular basis, for any signs of damage, vandalism, breakdown of surface finish, build-up of salt, dirt or atmospheric residue, and loose fixings.

During these inspections, should any concerns be noted, then the Customer's attention is brought to the following pages whereby suitable maintenance and repair methods are described for the various materials used.

In the event of serious damage to any main, or structural, component then Broxap should be contacted immediately for detailed technical advice.

In addition to the visual inspection, a regular cleaning regime is also required.

The required frequency of visual inspection and cleaning will be dependent on the environment in which the product is situated:

- In rural and urban environments (C1 – C3) the products should be visually inspected monthly, and cleaned every 3 months.
- In harsh industrial or coastal environments (C4, C5-I, C5-M), where the products may come into contact with concentrated atmospheric pollutants (chemical, marine), the visual inspection frequency should be increased to weekly, and the cleaning frequency increased to monthly (or as required).

Note – this document is not designed to be exhaustive and extensive in the exacting requirements of every case. If you consider your cleaning or repair circumstances to be outside of the scope of this document, then please contact Broxap and we will be happy to help you keep our products looking as new.

All cleaning and maintenance should be recorded, detailing the method of cleaning, what products have been used, and what repair work has been undertaken.

In the case of a warranty claim against Broxap, this information will be requested.



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Galvanized Coating

The Galvanizing used on the product has been processed in accordance with the requirements specified in BS EN ISO 1461:2009.

Galvanizing is a hot dip chemical reaction of molten zinc onto a steel substrate.

At the time of the process taking place the appearance will be one of shiny silver, however, this will not last and over a period of several weeks this will dull off to a grey colour. This is the natural finish of the Galvanized surface.

Note - due to the nature of the Galvanizing process some surface irregularities may occur on the surface of finished products. Although these will be finished flat, where possible, this will not be undertaken where it may breach the zinc coating. Some visual irregularities may therefore be present on galvanized products, including those finished with a polyester powder coating – these do not compromise the durability and performance of either the product or the coatings in any way.

The cleaning of any exposed Galvanized surfaces should be undertaken using:

1. A low pressure water wash e.g. hose pipe.
2. A soft brush, with warm soapy water, to remove any surface dirt.

Scourers, wire brushes, and abrasive cleaners must not be used during cleaning as they may compromise the protective surface and result in premature rusting.

After cleaning ensure the product is rinsed thoroughly.

Galvanizing has the ability to “self-heal” any minor knocks or scratches.

However, there will be occasions whereby the coating has been damaged to base steel at a size that will not allow for self healing. Based on this there are several proprietary repair paints on the market. In Broxap’s experience we have found 2 that give a satisfactory repair and finish for ongoing use. The 2 methods are either Galvafruid or Zinga with both being available in either a paste / brush application or an aerosol spray.

- Where the surface is scratched or damaged through to base steel, a check should be made to establish if rusting has occurred.
- Where rusting is present, then the area should be wire brushed / sanded to bring back to a bright steel surface.
- The system used for repair will state the required precautions that should be taken along with the application method, however, a build up of coating should be such that the thickness will be capable of giving ongoing protection as required. The coating thickness on renovated areas should be at least 100 microns.



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Powder Coating

As the name suggests, this process involves the application of a polyester powder onto the Galvanized substrate, using an electrostatic gun. This is then oven cured to create the hard wearing outer layer that can be seen on the finished product.

Note - due to the nature of the Galvanizing process some surface irregularities may occur on the surface of finished products. Although these will be finished flat where possible, this will not be undertaken where it may breach the zinc coating. Some visual irregularities may therefore be present on galvanized products, including those finished with a polyester powder coating – these do not compromise the durability and performance of either the product or the coatings in any way.

Powder coating can last many years, but its life expectancy depends on a variety of factors, including site location, atmospheric conditions and cleaning regime. The recommended cleaning frequency is detailed at the start of this section.

The cleaning of powder coated surfaces should be undertaken using either:

1. Warm mild soapy water and soft brush, sponge or natural bristle brush. Rinsed with clean water.
2. A proprietary car wash and wax system. Rinsed with clean water.

At no time during the cleaning process is it advisable for any abrasive cleaners, solvents, or other chemicals, to be used:

To enhance the appearance of the powder coating, an annual treatment with car wax would be acceptable, but not considered mandatory.

Where Graffiti is present, then it is recommended that no solvent cleaners are used in an attempt to remove it. The method of removal should be with the use of either a car 'T-Cutting' compound or through a specialist cleaner. This should be tested on a small, inconspicuous area first to assess its efficiency.

Where small repairs to the powder coat surface are required, then the following should be adhered to as a minimum:

- For light scratches / chips where the base metal is exposed then a suitable zinc-rich primer should be carefully applied to the defect, followed by a topcoat finish of a matching acrylic based paint or touch up (obtained from Broxap).
- Where scratches / chips have only exposed the galvanized surface, then the above must be followed with the exception of the Zinc Rich primer being applied.

For larger areas of damage, vandalism or coating breakdown, then Broxap should be contacted for technical advice.



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Stainless Steel

Stainless steels are selected in applications where their inherent corrosion resistance, strength and aesthetic appeal are required.

Surface contamination and the formation of deposits must be prevented. These deposits may be minute particles of iron or rust from other sources and not removed until after the stainless steel items have been installed. Industrial and even naturally occurring atmospheric conditions can cause deposits that can be equally as corrosive.

A working environment which offers more aggressive conditions, eg hot and humid, such as swimming pools, increases the speed of discolouration and therefore requires maintenance on a more frequent basis.

All grades and finishes of stainless steel may in fact stain, discolour or attain an adhering layer of grime in normal service. To achieve maximum corrosion resistance the surface of the stainless steel must be kept clean. Providing the correct grade is specified, any contamination from handling, manufacturing and installation is removed, and cleaning schedules are carried out regularly, good performance and long life will be achieved.

The two grades of stainless steel used in Broxap products are grade 316 & grade 304:

Grade 316 (1.4401) - has a greater chromium and nickel content than grade 304, and includes molybdenum. This increases its corrosion resistance properties and makes it less susceptible to surface pitting and staining. It is therefore suited to all external areas, especially marine locations where there is a high level of sodium chloride in the air.

Grade 304 (1.4301) – is more suited to rural and urban locations where there is less risk of sodium chloride contamination.

Advice is often sought concerning the frequency of cleaning stainless steel and the answer is quite simple: “clean the metal when it is dirty in order to restore its original appearance”. This may vary from one to four times a year for external applications.

Recommended maintenance schedules for the two grades differ slightly due to the differences in the chemical make-up.

The table below shows the recommended cleaning frequencies for the two grades in each type of atmosphere:

Location	Grade 304 (1.4301)	Grade 316 (1.4401)
Internal	As required to maintain appearance	
Suburban or rural	6-12 month intervals (as appropriate to location and design)	
Industrial or urban	3-6 month intervals	6-12 month intervals
Coastal or marine	Not recommended	3-6 month intervals

Stainless steel is easy to clean. Washing with soap or a mild detergent and water, followed by a clear water rinse, is usually quite adequate for domestic and architectural products. An enhanced aesthetic appearance will be achieved if the cleaned surface is wiped dry.

On brushed (satin) finishes, nylon abrasive blocks may be used to remove minor surface imperfections, ground in dirt and scratches. These blocks are flexible and are impregnated with grit. Note – they must always be used in the same direction as the original polishing marks.

Where stainless steel has become extremely dirty, with signs of surface discolouration, (perhaps following a period of neglect or misuse) alternative methods of cleaning will be required. These are detailed in the table below:

Problem	Cleaning Agent	Comments
Routine cleaning	Soap or mild detergent (eg. Fairy Liquid) and water	Sponge, rinse with clean water; wipe dry if necessary
Fingerprints	Soap or warm water or organic solvent (eg. Acetone, Alcohol)	Rinse with clean water; wipe dry if necessary
Stubborn stains/discolouration	Mild non-abrasive cleaning solutions or creams (eg. Jif, Cif)	Rinse well with clean water and wipe dry
Oil/grease marks	Organic solvents (eg. Acetone, Alcohol)	Clean afterwards with soap and water and wipe dry
Localised rust	Proprietary gels, 10% Phosphoric Acid or Oxalic Acid solution. Apply with a swab and allow to stand for 15 minutes before being washed away with water. May continue using Jif to give final clean	Rinse well with clean water. For Phosphoric Acid rinse first with Ammonia solution. (precautions for acid cleaners should be observed)
Mortar/Cement splashes	10% Phosphoric Acid solution. Use warm.	Rinse first with Ammonia solution, then clean water and wipe dry.
Badly neglected surfaces with accumulated grime deposits	A fine, abrasive paste as used for car body refinishing (eg. T-cut)	May brighten dull finishes. To avoid a patchy appearance, the whole surface may need to be treated
Paint/Graffiti	Alkaline or solvent paint stripper according to type of paint	Use soft nylon or bristle brush. Follow manufacturer's instructions.



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The products referenced in the table are understood to be suitable for stainless steels. However, no endorsement of the products or their manufacturers is implied and it is acknowledged that other manufacturing companies may provide products of equal or better quality.

If the cleaning methods detailed in this information sheet prove unsuccessful, it is worth bearing in mind that stainless steel can be passivated or mechanically polished by specialists on site.

More detailed information regarding life expectancy of Stainless Steel or how the surface will perform along with suitable cleaning regimes can be obtained by visiting:

http://www.bssa.org.uk/technical_information.php

PETg Sheeting

PETg is a material proven to work well as a cheaper alternative to glass. The product has a certain amount of flex and therefore, allows for it to be used easier on slightly curved roofing.

PETg is considered a dimensionally stable material and moves very little due to the differences experienced with temperature. However, so as to prevent issues being seen, all fixing holes are drilled at a size larger than the required fixing along with spacers utilised to prevent fixing grab when tightened.

Cleaning should be undertaken with the use of a soft cloth and warm soapy water. It is not recommended to use a broom or similar on the surface of the PETg as this will result in scratches to the surface.

At no time during the cleaning process should any abrasive cleaners, solvents or other chemicals be used i.e.

Ajax / Cif Scourer

Nylon scouring pads

Thinners

White Spirits

Methylated Spirits etc.



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Should any cracks appear in the surface of the PETg or holes be knocked through due to vandalism or misuse then:

1. The shelter should be isolated with immediate effect
2. The faulty sheet/s must be removed by either – drilling out the rivets or removing the tekscrews
3. Replacement sheets can be sourced from Broxap along with the option of installation also

The reason for the above actions to be taken is to prevent the possible injury to any third party due to the resultant fracture surfaces being sharp.

Consideration should be given to the surrounding area and its usage. Where footballs or other ball games are used then the constant impact with the PETg will eventually result in damage that requires repairing. Repairs can only be effected by the replacement of the damaged panel which can be sourced from Broxap direct.

In area's and times when snow fall is heavy and a skin forms over the shelter roof, then it is a mandatory requirement for the snow build up to be removed. This activity will need to be completed in a proper and safe manner so as to reduce the risk to the operative carrying out the task or causing damage to the PETg affected.

Multiwall Sheeting

The multiwall sheeting used on Broxap product will only have been used on the roof area. The edges of the sheet will be protected with an anti dust tape be it either impermeable or venting type. Tape is applied to the cut edges to prevent dust penetration between the sheets. These tapes must **never** be removed without prior consultation with either Broxap or Palram direct.

The ongoing maintenance and cleaning of the multiwall will follow a similar process to PETg as previous. However, more information can be obtained by visiting:

<http://www.broxap.com/maintenance>



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Glass Panels

The installed product may have been glazed partially or fully on the roof or side walls. The glass used would be either laminated or toughened; this would be dictated by the design requirements.

Both of these glasses are considered safer than traditional glass and therefore, no major maintenance will be required.

The key points to observe are:

1. The glass should be cleaned regularly to maintain its appearance. This operation can be completed using any proprietary glass cleaner and soft cloth.
2. In the case of the roof area, the external of such could be cleaned using a low pressure hose pipe or through the use of an appointed window cleaning contractor. Any person that is tasked with cleaning the glazed roof, must operate and observe all safety requirements and be informed that **under no circumstances must the glass roof area be walked on.**
3. Should any cracks be noted in the glazing, then the area should be fenced off from use with immediate effect. Repair or replacement of the panel can be achieved through the use of a specialist glazing contractor or by contact with Broxap directly.
4. All fixing clamps should be checked for being secure / tampered with. In the event that they have come loose, then they should be tightened up to a point whereby they give sufficient clamping force and the support required.



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Guttering

It is extremely important to perform gutter maintenance on both the plastic and aluminium systems on a regular basis so as to avoid any future concerns or unnecessary expenditure. For this maintenance to be completed, then it will be a requirement for the person undertaking it to be working at height. This can be through either the use of ladders, scaffold, cherry picker, scissor lift etc and it is the sole responsibility of the customer and maintenance person to ensure all safety precautions, training needs and supervision are correct and being utilised correctly.

Broxap cannot be held responsible for any injury that may occur as a result of completing this maintenance or due to the nature of equipment or personnel used.

The first step in gutter maintenance is to remove all debris, including leaves, twigs or other objects from the shelter roof. During the winter months, it is also important to remove any significant snow build up as the additional weight of snow and potential impact force of falling snow build up, can damage the gutters beyond repair. The plastic guttering system is especially fragile so great care must be taken not to damage this when attempting to clear debris and snow from the roof.

Once the roof is clear of debris, the gutter runs should be inspected. It's inevitable that some of the debris from the roof will make its way into the gutters. Look for leaves, twigs, and rocks etc. which may cause damage and remove them carefully without applying any pressure to the gutters.

Examine the gutter fittings which connect to the down pipe and remove any debris to avoid clogging. Water must be able to move freely through the gutter, the downspout and finally to the ground. If any part of the gutter or downspout becomes clogged, there is a potential for the weight of the water to cause damage to the system.

If the shelter is sited in a location which may be subject to leaf litter, we would recommend that a proprietary leaf guard be fitted at the top of the downspout.

To complete the gutter maintenance, make sure that you have checked the gutter supports and downspouts one last time. Once everything is cleaned, flush the gutters with water. Using a standard water hose, wash the roof and make sure that the water flows effectively from the roof and into the gutters. This process is very important to make sure that everything is working efficiently.

More information re the guttering installed can be obtained by visiting:

Plastic Gutter – <http://osma.wavin.com>

Aluminium Gutter – <http://www.stormguardrainwater.co.uk>

Timber Cladding

Should the product have wooden cladding installed then some basic maintenance will be required to get the maximum life from it and preserve its appearance.

1. A visual check should be completed annually, whereby any splinters or sharp edges of wood are lightly sanded to remove them. This will ensure that any user of the shelter does not get injured.
2. The wood should be coated with a proprietary wood stain system on an annual basis so as to preserve its appearance and longevity. Broxap recommend the use of Johnstones Woodworks Quick Dry Satin Woodstain.
3. If the wood starts to deteriorate and its aesthetic value cannot be maintained then it should be changed for a like for like replacement. The wood used for the original cladding would be Western Red Cedar. Where a replacement is made, then there will be a shading difference against any existing wood that remains, this is due to the weathering effect of wood in service.

More information relating to the wood stain system proposed by Broxap can be found by visiting:

http://www.johnstonestrade.com/product-range/product.aspx?product=Quick_Dry_Satin_Woodstain

Wet Painting

If any part of the product supplied has been wet painted, then it should be maintained as per the guidance given earlier against the powder coating system.

Information relating to the original primer and paint systems used can be obtained by contacting Broxap.

Additional Information

Additional information on maintenance can be found on the Broxap website:

www.broxap.com/maintenance





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Spares & Accessories

Many items are utilised across various products to offer efficiencies in drawing requirements, billing of materials, stock holding and stock utilisation.

As such, many items from our pre-design product ranges (such as cycle shelters, smoking shelters, cycle racks and cycle stands) are held in a galvanized state in stock. This allows damaged and irreparable components to be exchanged within a very small time scale, with the items only requiring picking and despatch (powder coating if a colour finish is required).

In these instances, many components from stock would be available to order and delivered within days.

Polycarbonate multiwall and PETg panels are also available on a short turnaround time, generally available to be delivered within one week – subject to quantity and delivery arrangements.

Broxap can provide installation operatives for the replacement of components, however dependant on the part requiring replacement, these can be taken care of by local operatives.