STAHLIN

A **ROBROY** ENCLOSURES® BRAND

Second Edition

Product Catalog

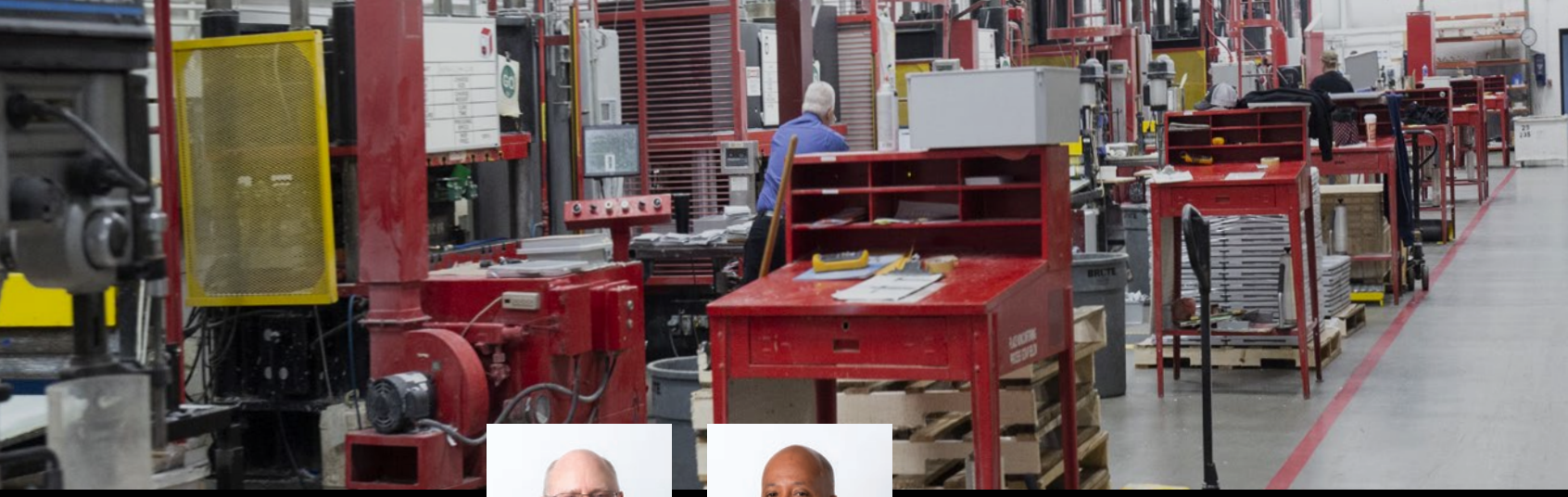
SE-500

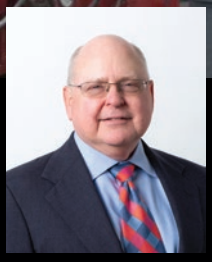
Non-Metallic Enclosures

Fiberglass | Polycarbonate | PVC

stahlin.com


STAHLIN
A ROBROY ENCLOSURES® BRAND





Jeff Seagle
RobRoy President
1993-2019

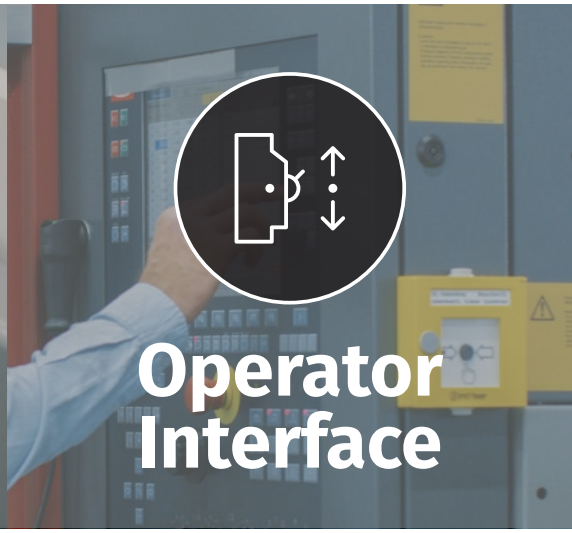
Craig Mitchell
RobRoy President
2019-Present

Passing of the Torch

What started as a simple idea back in the early 1950s between the Stahlin brothers, has blossomed into the creation of North America's leading manufacturer of non-metallic enclosures. Through the years, Stahlin has led the way through constant innovation, new products and close engagement with our customers. While offering the broadest line of nonmetallic enclosures, we believe it is our people that make the real difference. We truly care and take great American pride in what we do and offer! Stahlin, a true American gem, the right product at the right price delivered right now!

And now after more than 20 years at the helm, President Jeff Seagle hands the operation over to newly appointed President Craig Mitchell to continue the proud tradition of high performance that the market has come to expect.

Table of Contents



Industrial Control Enclosures

Junction Style Enclosures

Operator Interface Enclosures

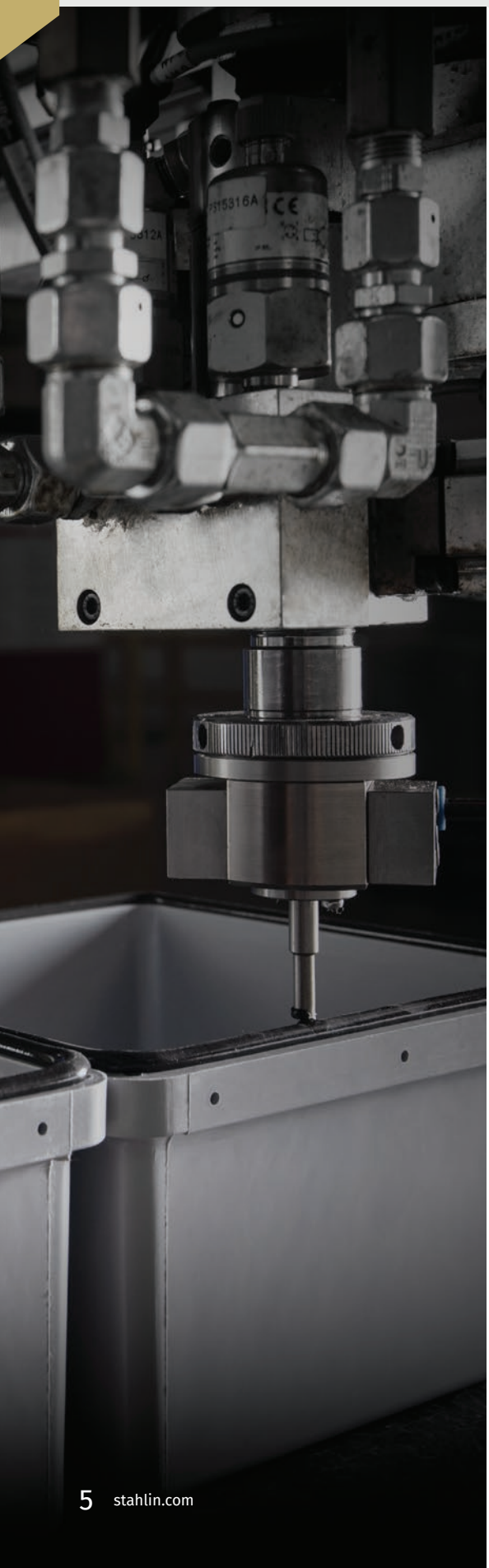
STAHLIN
A ROBROY ENCLOSURES® BRAND

Introduction

Panels

Accessories

Appendix



About Stahlin® Enclosures

Stahlin® Enclosures, the pioneer of non-metallic enclosure technology

Proudly made in Belding, Michigan for over 70 years, we have lead the electrical industry with innovation, quality, service, and exceeded our customer's expectations. Today, Stahlin offers the broadest non-metallic enclosure offering in North America. In fact, we are proud that Stahlin enclosures have been reliably installed in tens of millions of applications globally.

How do we do it? Put simply, we build non-metallic enclosures that meet your needs, with quality that will exceed your expectations. Because we are vertically integrated and the primary source producer of all our own enclosure components, we provide you assured quality control. From a single manufacturing location we formulate and blend our own fiberglass composite including patented SolarGuard® for unequaled UV resistance. We mold our enclosures using the highest processing standards while maintaining a balance between appealing aesthetics and stringent physical property performance standards including NEMA 4X and NEMA 6P integrity.

Whether you are looking for an off-the-shelf enclosure solution for a traditional application, highly custom solution, or value-add capabilities, Stahlin has you covered! Tradition of quality, craftsmanship, service, and pride. Right product. Right price. Right now.


MADE IN U.S.A.

History

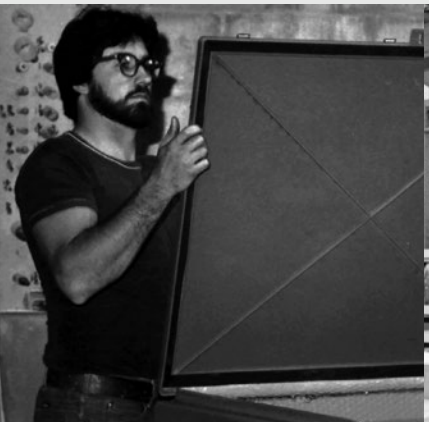
A history of firsts – then, now and tomorrow

Pioneers. Being “first” at something is easy to claim. At Stahlin Non-Metallic Enclosures, it's a fact. In the late 1940's, we pioneered the world's first fiberglass electrical enclosure. We've been pioneering ever since.

Throughout our nearly 70+ years, our innovation and proven quality have enabled us to lead the electrical products industry in designing, engineering and manufacturing world-class fiberglass, polycarbonate, and PVC electrical and instrumentation enclosures for diverse interior and exterior applications. Stahlin provides the marketplace's most extensive in-stock and customized line of non-metallic enclosures and accessories, balancing appealing aesthetics with stringent physical property performance standards including NEMA 4X, 6P, IEC IP66, and IP68 integrity. As a proud U.S. manufacturer, we are the primary source producer of all our own enclosure components.

Our company was originally known as Stahlin Brothers Fibre Works. John and Paul Stahlin were young entrepreneurs who grew up in the city of Belding, Michigan in the early 1900’s. Beginning in 1935 the Stahlin brothers launched a series of business enterprises serving the appliance, defense, and automotive industries. In 1953 the company made its first venture into both the electrical industry when it began producing a fiberglass panel channel.

Introduction



Over the next decade, growing expertise in effective production of fiberglass products at Stahlin Brothers Fibre Works resulted in the evolution of the world's first electrical fiberglass enclosure and an entire new market sector was born. Growth followed quickly, and many enclosure families that originated during the 1960's and 1970's—our push-button, J series, and N series—still exist today as thriving product lines.

In 1978, Robroy Industries of Verona, Pennsylvania purchased Stahlin Brothers Fibre Works. Robroy Industries was established in 1905 by Peter McIlroy whose fourth-generation great-grandsons, Rob and Jeff, own and operate the company today. Organizationally, Stahlin Non-Metallic Enclosures is a brand of Robroy Enclosures, which is a subsidiary of Robroy Industries. Backed by the resources of Robroy Industries, Stahlin Non-Metallic Enclosures began a dramatic phase of growth highlighted by our current offering of 15 product families featuring hundreds of sizes and multiple configurations of non-metallic enclosures plus accessories.

Our pioneering history has empowered us to remain at the very leading edge of today's electrical enclosures industry with hands-on control of our integrated, in-house manufacturing process from first step to last touch. This has resulted in unsurpassed, proven product performance quality. Our non-metallic enclosures offer significant economic savings over metallic alternatives such as stainless steel, yet provide comparable or superior physical property benefits. We are price competitive with other non-metallic material options while frequently offering better performance value.

We are also a proud part of the vibrant community in which our company was founded, grew, and prospered. Annually for more than a decade, the Michigan Business and Professional Association has chosen Stahlin Non-Metallic Enclosures as one of “West Michigan’s 101 Best and Brightest Companies." We are honored to be able to support our neighbors through rewarding employment opportunities and by way of ongoing civic and charitable contributions.

Industries

Unique enclosure solutions

Stahlin non-metallic enclosures excel in harsh environments and are used in an endless variety of industries and applications. From standard product to modified, Stahlin offers a solution. Stahlin has vast experience selling into complex vertical markets and offers unique, enclosure solutions. Our propriety SolarGuard® technology has allowed Stahlin non-metallic enclosures to be installed globally in some of the harshest environments and applications. Looking for a nonmetallic electrical enclosure for your specific application or need? Stahlin **IS** the answer!

Solar

- Solar Panel Installations
- Combiner Box Applications

Wastewater Treatment

- Instrumentation
- Industrial Monitoring and Pump Controls

Agriculture, Farming and Irrigation

- Controls
- Timer Applications

Car Wash

- Controls

Communications and Telecom

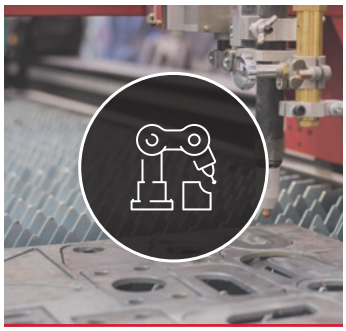
- Wireless
- Utility Networking

Lighting Control

- Timer Controls
- Power Distribution

Utilities

- Networking
- Power Distribution



Electrical Equipment Manufacturing

- Industrial Control Applications
- Robotics

Food & Beverage

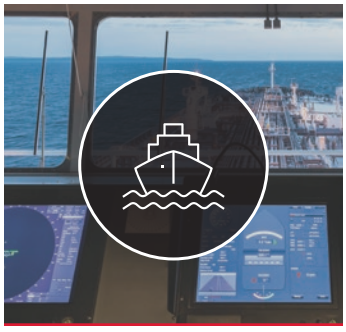
- Controls
- Power Distribution
- Wash Down Applications

Mining

- Controls
- Power Distribution
- Networking and Communications

Oil & Gas

- Remote Monitoring
- Flow Control and Monitoring



Marine

- Corrosive
- Wet Locations
- Controls

Using this Catalog

Find your unique solution

Designers and builders recognize that an original idea is only a framework for the final concept. The idea will undergo many transformations to become a finished vital product. But the quality of the original framework will greatly influence the quality of the final outcome.

So it is with the original choice of enclosures. The choice represents the formation of a creative idea and assists in making it a reality. This catalog is about creative stimulation and the challenge to find your own unique solution and application.

The pages have been arranged to assist you with ordering information and the development of proper part numbers. Section tabs and icons help to define key product areas, features and design concepts. They are provided as a means of quickly locating products found in the index and a reference to parts of the catalog to which you might often return. Enhanced images (doors opened and closed) give insight to specific features of each style enclosure. A full listing of Stahlin part numbers is offered at the rear of the catalog to help you easily find your way to the appropriate detailed product pages.

Additionally, each principle category has first been given a general overview, then a technical specification of each configuration available, such as the type of hinge or latch. And finally, we give you a close up look at each technical, dimensional drawing.

Product Categories

Our products are organized into three main categories:

Industrial Control

Stahlin Industrial Control enclosures are designed for indoor or outdoor use to house electrical and electronic controls, instruments, and components in areas that may be regularly hosed down, are in very wet conditions, or are exposed to corrosive agents. These enclosures provide excellent protection from dust, dirt, oil and water.

Junction Style

Junction Style enclosures are designed for indoor or outdoor use to house wiring terminations, electronic controls, instruments and components in areas that may be regularly hosed down, are in very wet conditions, or are exposed to corrosive agents. Junction enclosures provide protection from dust, dirt, oil, and water.

Operator Interface

Stahlin Operator Interface enclosures are designed for indoor or outdoor use to house electrical and electronic controls, instruments, components, pushbuttons, switches, and pilot lights in areas that may be regularly hosed down, are in very wet conditions, or are exposed to corrosive agents. These enclosures provide excellent protection from dust, dirt, oil and water.

Product Features

Hinges and latches are blown up for more detail:

Standards

Electrical enclosure non-hazardous locations

Application

The products in this catalog are designed for electrical and electronic enclosure applications in commercial or industrial locations that are classified as non-hazardous. Information on the classification of hazardous and non-hazardous locations appears at the end of this section.

The enclosure products in this publication should be applied, installed and used only by qualified engineers, technicians or electricians knowledgeable of the standards, laws, regulations and ordinances associated with the respective application. The information in this section has been condensed from several references and is provided for guidance in selecting the appropriate enclosure for an application. The original reference must be consulted for detailed information.

Industry Standards

The following information is provided with permission of the respective organizations to assist in the selection of an enclosure:

Enclosure Ratings

What are Ratings?

As a way of standardizing enclosure performance, organizations like NEMA, UL, CSA and IEC use rating systems to identify an enclosure's ability to resist external environmental influences. These influences include falling dirt or liquids, hose directed water to complete submersion and each are broken out by the TYPE rating. While these ratings are intended to assist you in your enclosure selection there are differences among the organizations.

North American Standards Organizations

In North America, NEMA, UL and CSA are the more common recognized standards organizations. Ratings between these organizations are similar in description and performance. UL and CSA both require enclosure testing that is conducted in certified labs. They also conduct site evaluations or field audits to ensure manufacturers adheres to prescribed manufacturing methods and material specifications within the approved UL/CSA files. NEMA publishes a standard for ratings and testing, but does not test or list enclosures.

International Standards Organizations

International Electrotechnical Commission (IEC) does not require independent testing, similar to NEMA, but there are differences in the interpretation between the two organizations. For example, under the IEC standards for each level of ingress protection (IP), a certain amount of water is allowed to enter the enclosure. Unlike UL or CSA, water-tight means simply that. Any amount of water ingress regardless of size or amount is considered a failure to the specification.

IEC 60529 IP ratings do not specify construction or degrees or protection, while NEMA type ratings do specify construction and performance requirements for most conditions. Because of these differences in tests and evaluations, the IEC enclosure ratings cannot be directly translated with NEMA enclosure Type ratings.

Reference Documents and Sources

National Electrical Manufacturers Association (NEMA)
1300 North 17th ST, Suite 1847
Rosslyn, VA 22209
www.nema.org

NEMA Standards Publication 250, Enclosures for Electrical Equipment (1000 Volts Maximum) and NEMA Standards Publication ICS6, Enclosures for Industrial Controls and Systems.

Canadian Standards Association (CSA)
178 Rexdale Blvd.
Etobicoke, Ontario, Canada M9W 1R3
www.csa.ca

CSA Standard C22.2 No. 14 Industrial Control Equipment for Use in Ordinary (Non-Hazardous) Locations; CSA Standard C22.2 No. 40 Cut-Out, Junction and Pull Boxes; and CSA Standard 22.2 No. 94 Special Purpose Enclosures.

Underwriters Laboratories (UL)
333 Pfingsten Road
Northbrook, IL 60062-2096
www.ul.com

Underwriters Laboratories of Canada
7 Crouse Road
Scarborough, Ontario, Canada M1R 3A9

UL 50/50e Enclosures for Electrical Equipment; UL 94 Tests for Flammability of Plastic Materials for Parts in Devices and Appliances; UL 508 Industrial Control Equipment; UL 870 Wireways, Auxiliary Gutters and Associated Fittings; and UL 746C Polymeric Materials – Use in Electrical Equipment Evaluations.

International Electrotechnical Commission (IEC)
1 Rue de Varembei
CH-1211
Geneva 20, Switzerland
www.iec.ch

IEC 529 Classification of Degrees of Protection Provided by Enclosures IEC 204 Electrical Equipment of Industrial Machines.

American National Standards Institute (ANSI)
1430 Broadway
New York, NY 10018
www.ansi.org

ANSI Z55.1 Gray Finishes for Industrial Apparatus and Equipment.

National Fire Protection Association (NFPA)
Batterymarch Park
Quincy, MA 02269
www.nfpa.org

NFPA 70 National Electric Code
NFPA 79 Electrical Standard for Industrial Machinery

NEMA, UL, and CSA Ratings

NEMA, UL, and CSA are standard writing organizations commonly recognized in North America. Their ratings are based on similar application descriptions and expected performance. UL and CSA both require enclosure testing by qualified evaluators. They also send site inspectors to make sure a manufacturer adheres to prescribed manufacturing methods and material specifications. NEMA, on the other hand, does not require independent testing and leaves compliance completely up to the manufacturer.

Enclosure Types Non-Hazardous Location

Enclosure Rating	National Electrical Manufacturers Association (NEMA Standard 250) and Electrical and Electronic Mfg. Association of Canada (EEMAC)	Underwriters Laboratories Inc. (UL 50, UL50e and UL 508)	Canadian Standards Association (Standard C22.2 No. 94)
Type 1	Enclosures are intended for indoor use primarily to provide a degree of protection against contact with the enclosed equipment or locations where unusual service conditions do not exist.	Indoor use primarily to provide protection against contact with the enclosed equipment and against a limited amount of falling dirt.	General purpose enclosure. Protects against accidental contact with live parts.
Type 2	Enclosures are intended for indoor use primarily to provide a degree of protection against limited amounts of falling water and dirt.	Indoor use to provide a degree of protection against limited amounts of falling water and dirt.	Indoor use to provide a degree of protection against dripping and light splashing of non-corrosive liquids and falling dirt.
Type 3	Enclosures are intended for outdoor use primarily to provide a degree of protection against windblown dust, rain, and sleet; undamaged by the formation of ice on the enclosure.	Outdoor use to provide a degree of protection against windblown dust and windblown rain; undamaged by the formation of ice on the enclosure.	Indoor or outdoor use; provides a degree of protection against rain, snow, and windblown dust; undamaged by the external formation of ice on the enclosure.
Type 3R	Enclosures are intended for outdoor use primarily to provide a degree of protection against falling rain sleet; undamaged by the formation of ice on the enclosure.	Outdoor use to provide a degree of protection against falling rain; undamaged by the formation of ice on the enclosure.	Indoor or outdoor use; provides a degree of protection against rain and snow; undamaged by the external formation of ice on the enclosure.
Type 4	Enclosures are intended for indoor or outdoor use primarily to provide a degree of protection against windblown dust and rain, splashing water, and hose-directed water; undamaged by the formation of ice on the enclosure.	Either indoor or outdoor use to provide a degree of protection against falling rain, splashing water, and hose-directed water; undamaged by the formation of ice on the enclosure.	Indoor or outdoor use; provides a degree of protection against rain, snow, windblown dust, splashing and hose-directed water; undamaged by the formation of ice on on the enclosure.
Type 4X	Enclosures are intended for indoor or outdoor use primarily to provide a degree of protection against corrosion, windblown dust and rain, splashing water, and hose-directed water; undamaged by the formation of ice on the enclosure.	Either indoor or outdoor use to provide a degree of protection against falling rain, splashing water, and hose-directed water; undamaged by the formation of ice on the enclosure; resists corrosion.	Indoor or outdoor use; provides a degree of protection against rain, snow, windblown dust, splashing and hose-directed water; undamaged by the external formation of ice on the enclosure; resists corrosion.
Type 6	Enclosures are intended for use indoors or outdoors where occasional submersion is encountered. limited depth; undamaged by the formation of ice on the enclosure.	Indoor or outdoor use to provide a degree of protection against entry of water during temporary submersion at a at a limited depth; undamaged by the external formation of ice on the enclosure.	Indoor or outdoor use; provides a degree of protection against the entry of water during temporary submersionat a limited depth. Undamaged by the external formation of ice on the enclosure; resists corrosion.
Type 6P	Enclosures constructed for either indoor or outdoor use to provide a degree of protection to personnel against access to hazardous parts; to provide a degree of protection of the equipment inside the enclosure against ingress of solid foreign objects (falling dirt); to provide a degree of protection with respect to harmful effects on the equipment due to the ingress of water (hose directed water and the entry of water during prolonged submersion at a limited depth); that provides an additional level of protection against corrosion and that will be undamaged by the external formation of ice on the enclosure.	Indoor or outdoor use primarily to provide a degree of protection against hose-directed water, the entry of water during prolonged submersion at a limited depth and damage from external ice formation.	Indoor or outdoor use primarily to provide a degree of protection against hose-directed water, the entry of water during prolonged submersion at a limited depth and damage from external ice formation.
Type 12	Enclosures are intended for indoor use primarily to provide a degree of protection against dust, falling dirt, and dripping noncorrosive liquids.	Indoor use to provide a degree of protection against dust, dirt, fiber flyings, dripping water, and external condensation of noncorrosive liquids.	Indoor use; provides a degree of protection against circulating dust, lint, fibers, and flyings; dripping and light splashing of non-corrosive liquids; not provided with knockouts.
Type 13	Enclosures are intended for indoor use primarily to provide a degree of protection against dust, spraying of water, oil, and noncorrosive coolant.	Indoor use to provide a degree of protection against lint, dust seepage, external condensation and spraying of water, oil, and noncorrosive liquids.	Indoor use; provides a degree of protection against circulating dust, lint, fibers, and flyings; seepage and spraying of non-corrosive liquids, including oils and coolants.

This material is reproduced with permission from NEMA. The preceding descriptions, however, are not intended to be complete representations of National Electrical Manufacturers Association standards for enclosures or those of the Electrical and Electronic Manufacturers Association of Canada.

This material is reproduced with permission from Underwriters Laboratories Inc. Enclosures for Electrical Equipment, UL 50, Copyright 1995 and Industrial Control Equipment, UL 508, Copyright 1996 by Underwriters Laboratories Inc. Underwriters Laboratories Inc. (UL) shall not be responsible for the use of or reliance upon a UL Standard by anyone. UL shall not incur any obligation or liability damages, including consequential damages, arising out of or connection with the use, interpretation of, or reliance upon a UL Standard.

This material is reproduced with permission from the Canadian Standards Association.

Comparison of Enclosure Types for Non-hazardous Locations

Provides a Degree of Protection Against the Following Environmental Conditions	Type of Enclosure								
	1	3	3R	4	4X	6	6P	12	13
Incidental Contact with Enclosed Equipment	•	•	•	•	•	•	•	•	•
Indoor	•	•	•	•	•	•	•	•	•
Outdoor		•	•	•	•	•	•		
Falling Dirt	•	•	•	•	•	•	•	•	•
Dripping and Light Splashing Liquids		•	•	•	•	•	•	•	•
Rain, Sleet*, Snow		•	•	•	•	•	•		
Circulating Dust, Lint, Fibers and Flyings		•		•	•	•	•	•	•
Settling Dust, Lint, Fibers and Flyings		•		•	•	•	•	•	•
External Ice*		•	•	•	•	•	•		
Hosedown and Splashing Water				•	•	•	•		
Oil and Coolant Seepage								•	•
Oil and Coolant Spraying and Splashing									•
Corrosive Agents					•		•		
Occasional Temporary Submersion						•	•		
Occasional Prolonged Submersion							•		

**External operating mechanisms are not required to be operable when the enclosure is ice covered*

IEC 60529 – "Degrees of Protection Provided by Enclosures (IP Code)"

This publication is intended to provide a brief explanation of some of the basics in IEC Standard 60529, Degrees of Protection provided by Enclosures (IP Code). For a detailed comparison of the differences between the NEMA 250 and IEC 60529 performance specifications, please refer to the respective documents.

What is IEC 60529 and what does it cover?

IEC 60529 is a standard developed through the International Electrotechnical Commission (IEC) that describes a system for classifying the degrees of protection provided by an enclosure. An "enclosure" as used in 60529 is "a part providing protection of equipment against certain external influences and in any direction protection against direct contact".

What is not covered by IEC 60529?

IEC 60529 is NOT a "product standard" and does not cover enclosure requirements other than the "degree of protection" provided. For instance IEC 60529 does not specify the corrosion protection and other environmental operating requirements and tests defined in NEMA 250.

What does "degree of protection" mean in IEC 60529?

"Degree of protection" is a term used in the standard to describe:

1. The protection of persons against access to hazardous parts inside the enclosure.
2. The protection of the equipment inside the enclosure against ingress of solid foreign objects.
3. The protection of the equipment inside the enclosure against harmful effects due to the ingress of water.

What is an "IP Code"?

The IP Code is a designation that indicates the level, or amount, of the protection. The IP Code designation consists of the letters IP (International Protection or Ingress Protection) followed by two numerals. In some instances there may be an optional letter or third digit representing protection against access and mechanical impacts. These two items are beyond the scope of this reference. Please consult additional resources as required.

What does the first numeral of an IP Code indicate?

The first characteristic numeral indicates the degree of protection provided by the enclosure with respect to persons having access to hazardous parts and with respect to solid foreign objects entering the enclosure. See Table 1.

What does the second numeral of an IP Code indicate?

The second numeral indicates the degree of protection provided by the enclosure with respect to the harmful ingress of water. See Table 2.

If a requirement for an enclosure Type is specified, can an equivalent IP rated enclosure be substituted?

No! The IP Code only addresses requirements for protection of people, ingress of solid objects, and ingress of water. There are numerous other requirements covered by the Type designations that are not addressed by the IEC 60529/IP Codes. IEC 60529 does not specify:

- → Construction requirements
- → Effects of icing
- → Door and cover securement
- → Gasket aging and oil resistance
- → Corrosion resistance
- → Coolant effects

The Type designation specifies requirements for these additional performance protections. For this reason, the IEC enclosure IP Codes designations **CANNOT** be converted to enclosure Type numbers. For general cross reference comparison see See Table 2.

TABLE 1

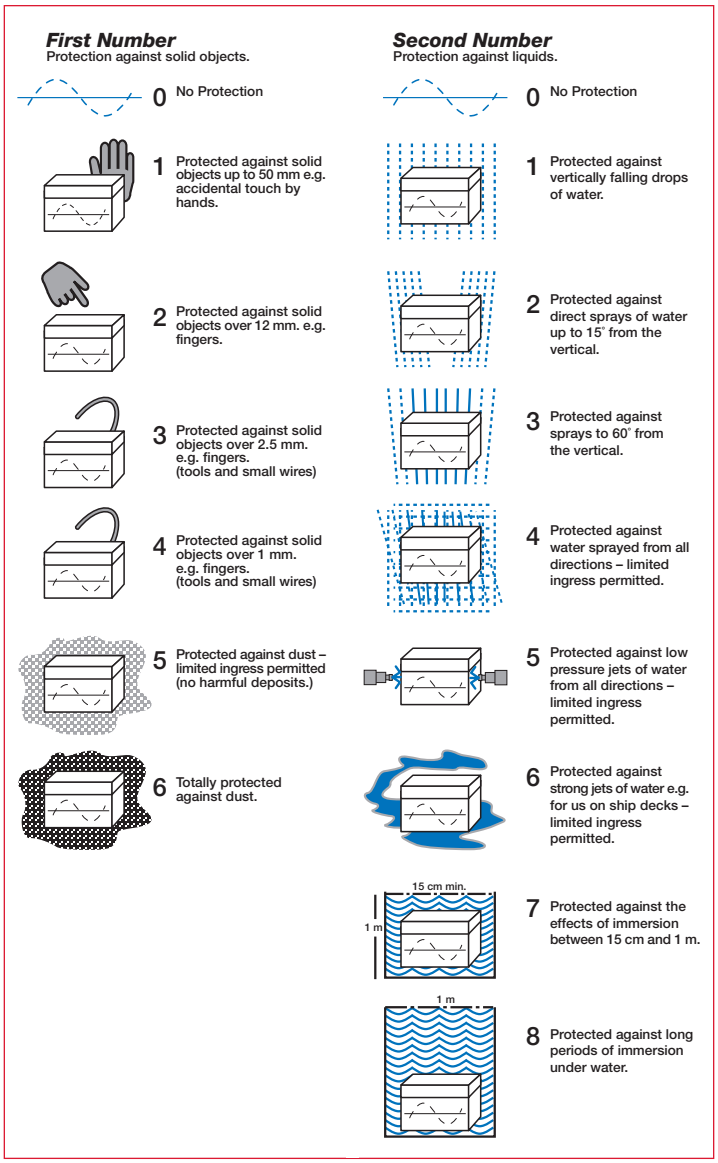


TABLE 2 – Assignment of IP Designations to NEMA Type Enclosure Ratings

NEMA Rating	IEC Rating
1	IP23
2	IP30
3	IP64
3R	IP32
4	IP66
4X	IP66
6	IP67
12	IP55
13	IP65

The data contained in the table is provided for information and this table must only be used to apply NEMA ratings to IEC designators; it should not be used inversely. The cross-reference is based on engineering judgment and is not approved by the standards organizations.

Enclosure Selection Guidelines

Making the process easier, more consistent and accurate

The Enclosure Selection is designed to enhance enclosure selection by making the process easier, more consistent, accurate and complete. The goal is to assure that factors affecting enclosure selection are considered and the enclosure specification is complete and accurate.

1. Examination of the Application

The requirements of your application must be taken into consideration. Often the application will be associated with the market or product. For example, does the application require a disconnect, does it need to be wall mount or free standing. Each application is different and needs a complete review.

2. Environmental Considerations

Regardless of application - solar field, factory floor, chemical plant, the environment is a critical factor for consideration.

In the proposed environment, what is the highest threat? Based on this threat and the use of NEMA ratings you can determine which enclosure offers the best protection.

3. Material Considerations

Based on the environmental protection that you identify, you will need to define the appropriate material for you application.

- Fiberglass
- Polycarbonate
- PVC
- ABS
- Carbon Steel
- Stainless Steel
- Aluminum

4. Size Considerations

Several factors will need to be evaluated when specifying the size of the enclosure, such as:

- Internal equipment dimensions
- Service connections
- External space restrictions
- Mounting and access
- Climate control requirements
- Aesthetics
- Economics

5. Standards or Ratings

Select an enclosure that has a rating appropriate for your environment and application. Rating types from NEMA, UL, CSA, and IEC determine an enclosures ability to withstand environmental conditions. Keep in mind that there may be multiple enclosures that meet the ratings which may be reduced by material and size considerations.

6. Thermal Considerations

To maximize the life and efficiency of internal components effective thermal management considerations need to be evaluated. One often thinks in terms of dissipating heat build-up, but one must also consider applications that require addition of heat.

Hazardous Locations

Classification of hazardous atmospheres

The NEC classifies areas according to the nature, likelihood and extent of ignitable flammable hazards that could exist where electrical equipment is installed. The intent of area classification is to prevent fires and explosions that could be caused by electrical equipment serving as an ignition source (arc, spark, high temperature, etc.).

The NEC divides the atmospheric explosion hazards into three classes. Considerable skill and judgment must be applied when deciding to what degree an area contains hazardous concentrations of vapors, combustible dusts or ignitable fibers and flyings.

Factors such as temperature, barometric pressure, humidity, ventilation, quantity of release, distance from the source, etc. must all be evaluated.

An abbreviated summary of the NEC classifications appears in the table on the next page. For detailed information on specific atmospheres, refer to the NEC, Articles 501-505 and 511-517. For a more complete list of flammable liquids, gases and solids; refer to NFPA 497A and NFPA 497B, Classification of Gases, Vapors and Dusts for Electrical Equipment in Hazardous (Classified) Locations.

Summary of Hazardous Atmospheres

Class	Division	Group	Typical Atmosphere, Ignition Temperatures
I Flammable Gases, Vapors Flammable and Combustible Liquids	1 Normally hazardous – Always present in atmosphere	A	Acetylene, 305°C (581°F)
		B	Hydrogen, 520°C (968°F)
		C	Ethylene, 450°C (842°F)
		D	Methane, 630°C (999°F)
	2 Not normally hazardous – May be present in atmosphere	A	Same as Division 1
		B	Same as Division 1
		C	Same as Division 1
		D	Same as Division 1
II Combustible Dusts	1 Normally hazardous – Always present in atmosphere	E	Combustible metal dusts, or other combustible dusts of similar hazardous characteristics
		F	Combustible carbonaceous dusts
		G	Combustible dusts not included in Group E or F, includes flour, grain, wood, plastic & chemicals
	2 Not normally hazardous – Always present in atmosphere	F	Same as Division 1
		G	Same as Division 1
III Ignitable fibers and flyings	1 & 2	No Groups	

IEC methodology was added to the 1996 NEC in Article 505. The IEC uses area classifications similar to the NEC, but with different terms, groupings, descriptors and temperature range. Article 505 defines only Class I areas; however, the divisions and groupings are different as shown in the following tables:

Comparison of Groups

NEC Group	IEC Groups
A	IIC
B	IIC
C	IIB
D	IIA

IEC Group I is for underground mines and is not covered by the NEC. Group IIC combines NEC Groups A and B making the requirements for acetylene the same as for hydrogen and other highly flammable gases.

The IEC divides NEC Division 1 into Zone 0 and Zone 1. In Zone 0 the hazard is present at all times or for long periods of time. In Zone 1 the hazard is present during normal conditions, including repair and maintenance activities or leakage, or where operations or processes could result in the release of a flammable mixture or cause a simultaneous failure of electrical equipment.

Comparison of Divisions With Zones

NEC Division	IEC Zone
1	0
1	1
2	2
Non-hazardous	Non-hazardous

CAUTION:

These methodologies are mutually exclusive and should not be mixed and matched. Equipment approved for the NEC classifications may be used in the equivalent IEC area, but not vice versa. NEC Article 500-3 requires that the area classification, wiring and equipment selection be under the supervision of a qualified Registered Professional Engineer.

Enclosure ratings for hazardous locations include:

NEMA 7 – Enclosures constructed for indoor use in hazardous locations classified as Class I, Division 1, Groups A, B, C or D as defined in NFPA 70.

NEMA 8 – Enclosures constructed for either indoor or outdoor use in hazardous locations classified as Class I, Division 1, Groups A, B, C and D as defined in NFPA 70.

NEMA 9 – Enclosures constructed for indoor use in hazardous locations classified as Class II, Division 1, Groups E, F or G as defined in NFPA 70.

NEMA 10 – Enclosures constructed to meet the requirements of the Mine Safety and Health Administration, 30 C. F. R., Part 18.

ModRight™ Modifications

ModRight™ Modifications

This Stahlin catalog is devoted to practical applications and solutions to enclosure problems. A variety of off-the-shelf products are available to solve common industry related problems. Stahlin's ModRight Program is designed to support you in very uncommon or complex applications.

Stahlin Enclosures prides itself in its willingness and ability to meet the enclosure modification needs of our customers. The combination of technologically advanced equipment and a sound procedure for handling the most detailed modification allows Stahlin Enclosures to process modifications on time, and to the highest quality standards in the industry. Modifications can be mixed and matched in an endless number of combinations.

We are here to help with a fully staffed Application Engineering Team. To receive a quotation or further information, please visit us at **stahlin.com**.

They can take the form of:

Custom mold-in colors

→ We can color match to your required pantone

Silk screening/Digital Printing

→ Solid, multi and gradient color capabilities

EMI/RFI shielding

→ Copper shielding material

→ Consult factory for Ohms/Sq. In., Frequency range, and Attenuation

Custom window sizes

→ 2" x 1" up to Maximum allowable by UL

Custom cutouts/holes

→ Various sizes and shapes

→ Any side of enclosure or cover

Custom size enclosures

→ Maximum size allowable by UL

Customer covers

→ Embossed logo

Packaging

→ Stahlin offers "bulk packing" capabilities

Prototyping

→ Capability to do prototyping and testing prior to large volume runs

Custom materials

→ Custom material formulations to meet your unique requirements; UV, flame retardation, infestation resistance, etc.

Custom back panels

→ Holes, PEM's, studs, sizes, silk screening

Other special requests

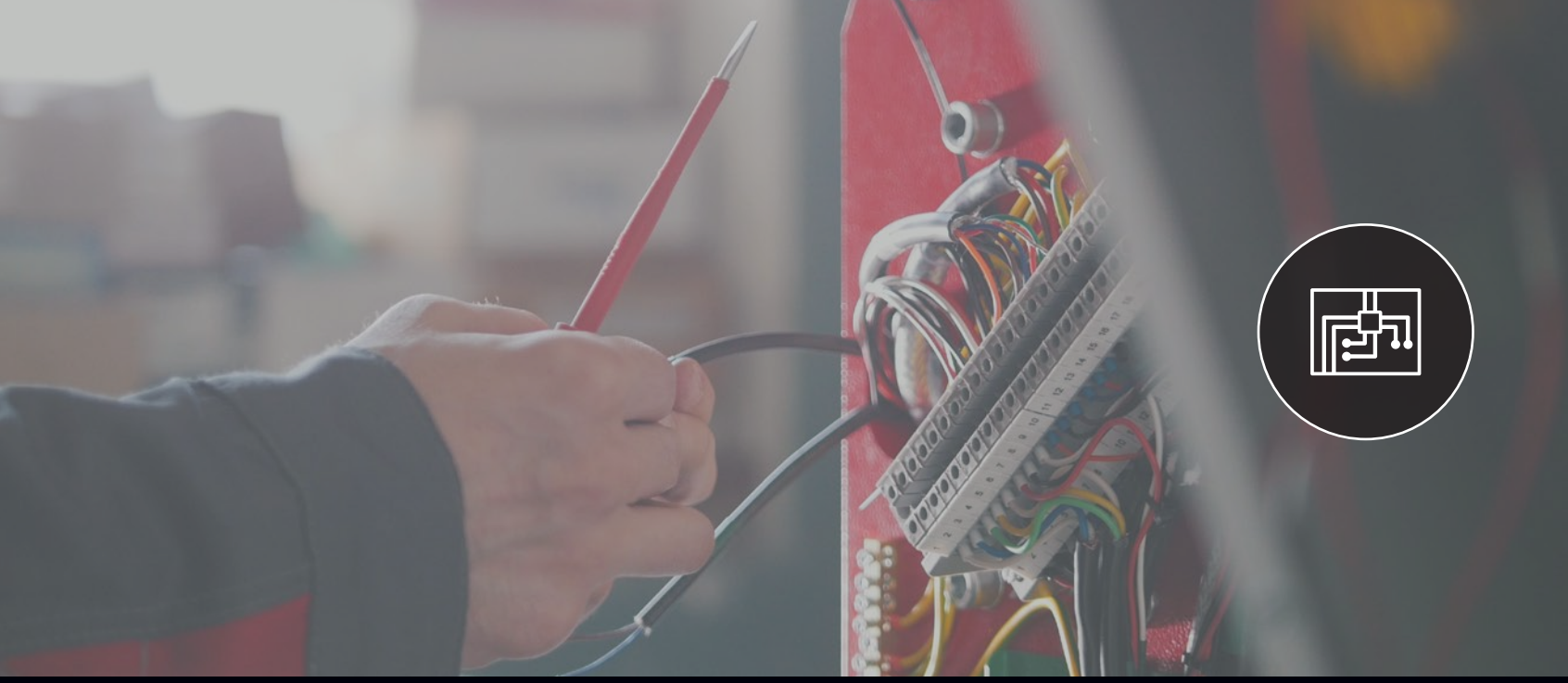
→ Endless value-add and component pre-assembly capabilities

Agriculture, Farming & Irrigation

"Personal attention does make a difference in my book. The team from Stahlin Non-Metallic Enclosures willingly makes regular visits to my company to keep up-to-date on our enclosure needs. We have also benefited from our local Distributor maintaining stock of Stahlin enclosures for our company. This stocking option makes it very e asy for us to quickly meet our customers' demands. Quick turnaround is essential for many of our client—as is keeping the greenhouse running 24/7 is very critical for their bottom line. From the very first enclosure ever shipped to us, the associates at Stahlin have always gone out of their way to solve problems and meet my needs, especially as we added new product lines. We could not have existed for over 40 years without value add partners like Stahlin."

– **Tom,** *President*
Leading Greenhouse and Indoor Grow Controls

Read more at: **stahlin.com/industries**



Industrial Control

PolyStar® Series

PolyStar® Series

PolyStar® Series enclosures are intended to be utilized for outdoor and indoor applications. The polycarbonate resin in the **PolyStar® Series** received the best rating, an "F1" per UL 746C. This means that the resin has passed tests for UV exposure and water immersion. The **PolyStar® Series** enclosures are rated 3R, 4, 4X, 12 per UL508A, UL50, UL50e and IP66, per IEC 60529. The material rating and the product rating can assure the user that the **PolyStar® Series** enclosures are suitable for outdoor use and exposure.

Self-extinguishing, non-halogenated, and non-flame propaging. **PolyStar® Series** is the most innovative, durable and reliable polycarbonate enclosure available.

Attributes

- Latches and hinges do not penetrate enclosure
- Easy to remove lid
- High performance inserts
- Integrated locking hasp
- Flush-fit side mount swing panel and DIN rail system
- Built in DIN rail mounting bosses
- Multi-directional mounting feet
- Available in standard Opaque or clear with smoke tint covers
- Side mounting solutions

Industry Standards

NEMA 250, cULus Listed UL50, UL50e, UL508A	UL Listed File: E319779 Type 1, 3R, 4, 4X, 12
IEC 60529	UL Listed File: E362920 IP66
Temperature Range	(-40°F to +248°F) (-40°C to +120°C)
Flammability Rating	UL94-5VA
Self Extinguishing	Non-haloginated, non-flame propagating
Chemical Resistance	Full chemical resistance charts listed in appendix
Outdoor UV Exposure	(f1) Rated

Product Configurations

POLYSTAR® SERIES

PC — OPAQUE COVER

CC — CLEAR COVER

Opaque Cover

PC **CONFIGURATION**
Hinged, latches

PC Construction

Material	Polycarbonate with UV inhibitors
Gasket Material	Neoprene rope style, Poured polyurethane seamless gasket on select sizes
Recessed Screws	No protruding surfaces
Stainless Steel Hardware	300 Series Stainless Steel
Mounting Bosses	Panel mounting capability for fixed rear panel
Metal Inserts	All threaded brass inserts accepting 10-32 screws
Side Mount Solutions	Variable height, any side mount capability
Hinge and Latch Material	Polycarbonate with UV inhibitors
Color	Available standard in RAL 7541C

PC Modifications

Custom Colors	pg. 21-22
Silk Screening	pg. 21-22
EMI/RFI Shielding	pg. 21-22
Custom Window	pg. 21-22
Custom Cutouts/Holes	pg. 21-22

PC Industry Standards

NEMA 250, cULus Listed **UL50, UL50e, UL508A**	UL Listed File: E319779 Type 1, 3R, 4, 4X, 12
IEC 60529	UL Listed File: E362920; IP66
Temperature Range	(-40°F to +248°F) (-40°C to +120°C)
Flammability Rating	UL94-5V0
Self Extinguishing	Non-haloginated, non-flame propagating
Chemical Resistance	Full chemical resistance charts listed in appendix
Outdoor UV Exposure	(f1) Rated

PC Accessories

BACK PANELS	**Aluminum**	BP__AL	pg. 174-175
	Fiberglass	BP__FG	pg. 174-175
	Carbon Steel	BP__CS	pg. 174-175
ACCESSORIES	**Slot Nut Kit** (includes two nuts & two screws)	PCSNK	pg. 30
	Swing Panel Mounts (4 per kit)	PCSPMK	pg. 30
	Latch Kit (2 PC latches per kit) – replacement only	PCLATCHKIT	pg. 30
	SS Latch Kit (2 – 316SS latches per kit) – replacement only	PCLATCHKITSS	pg. 30
	Accessory Kit (includes all screws, inserts, and mounting feet) – replacement only	PCACCESSORYKIT	pg. 30
KITS, ETC.	**Swing Panel Kit** (comes with mounts, screws and panel)	PC_SPK	pg. 30
	Din Rail		pg. 30
	Din Rail Kit		pg. 30
	Pole Mounting Kit		pg. 194

Clear Cover

CONFIGURATION
Hinged, latches CC

CC Construction

Material	Polycarbonate with UV inhibitors
Gasket Material	Neoprene rope style, Poured polyure-thane seamless gasket on select sizes
Recessed Screws	No protruding surfaces
Stainless Steel Hardware	300 Series Stainless Steel
Mounting Bosses	Panel mounting capability for fixed rear panel
Metal Inserts	All threaded brass inserts accepting 10-32 screws
Side Mount Solutions	Variable height, any side mount capability
Hinge and Latch Material	Polycarbonate with UV inhibitors
Color	Available standard in RAL 7541C

CC Modifications

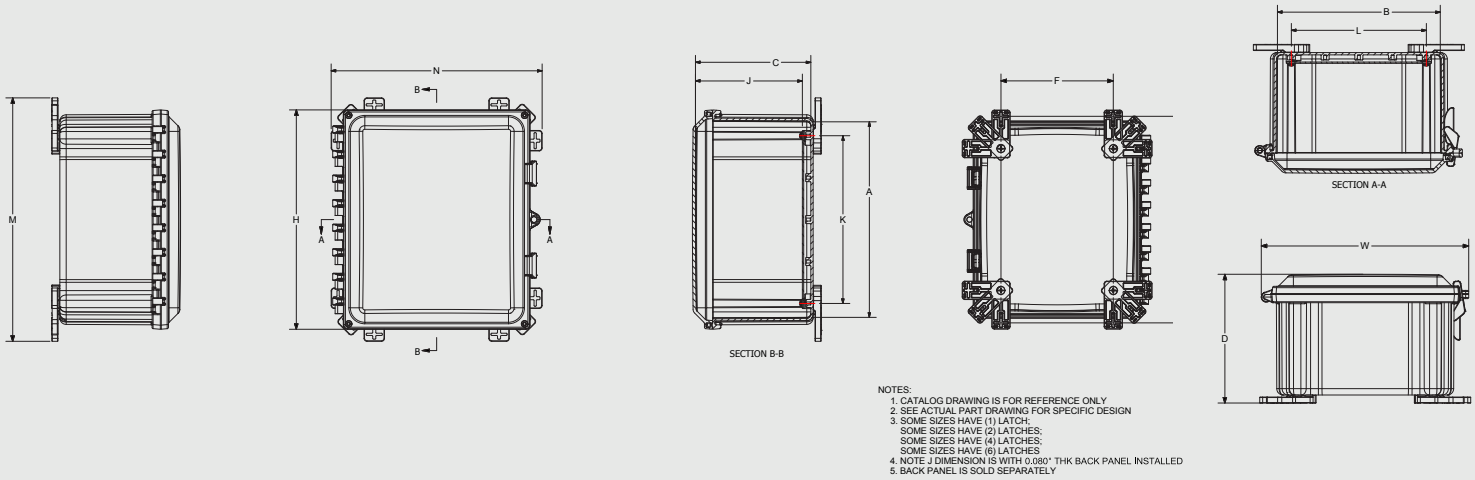
Custom Colors	pg. 21-22
Silk Screening	pg. 21-22
EMI/RFI Shielding	pg. 21-22
Custom Window	pg. 21-22
Custom Cutouts/Holes	pg. 21-22

CC Industry Standards

NEMA 250, cULus Listed UL50, UL50e, UL508A	UL Listed File: E319779 Type 1, 3R, 4, 4X, 12
IEC 60529	UL Listed File: E362920; IP66
Temperature Range	(-40°F to +248°F) (-40°C to +120°C)
Flammability Rating	UL94-5V0
Self Extinguishing	Non-halogenated, non-flame propagating
Chemical Resistance	Full chemical resistance charts listed in appendix
Outdoor UV Exposure	(f1) Rated

CC Accessories

BACK PANELS	**Aluminum**	BP__AL	pg. 174-175
	Fiberglass	BP__FG	pg. 174-175
	Carbon Steel	BP__CS	pg. 174-175
ACCESSORIES	**Slot Nut Kit** (includes two nuts & two screws)	PCSNK	pg. 30
	Swing Panel Mounts (4 per kit)	PCSPMK	pg. 30
	Latch Kit (2 PC latches per kit) – replacement only	PCLATCHKIT	pg. 30
	SS Latch Kit (2 – 316SS latches per kit) – replacement only	PCLATCHKITSS	pg. 30
	Accessory Kit (includes all screws, inserts, and mounting feet) – replacement only	PCACCESSORYKIT	pg. 30
KITS, ETC.	**Swing Panel Kit** (comes with mounts, screws and panel)	PC_SPK	pg. 30
	Din Rail		pg. 30
	Din Rail Kit		pg. 30
	Pole Mounting Kit		pg. 194



NOTES:
1. CATALOG DRAWING IS FOR REFERENCE ONLY
2. SEE ACTUAL PART DRAWING FOR SPECIFIC DESIGN
3. SOME SIZES HAVE (1) LATCH;
   SOME SIZES HAVE (2) LATCHES;
   SOME SIZES HAVE (4) LATCHES;
   SOME SIZES HAVE (6) LATCHES
4. NOTE J DIMENSION IS WITH 0.080" THK BACK PANEL INSTALLED
5. BACK PANEL IS SOLD SEPARATELY

SCREW SIZES & TORQUE VALUES

PRODUCT SIZES	BACK PANEL SCREW SIZE	BACK PANEL RECOMMENDED TORQUE	COVER SCREW SIZE	COVER SCREW RECOMMENDED TORQUE	MOUNTING FOOT SCREW SIZE	MOUNTING FOOT SCREW RECOMMENDED TORQUE	RECOMMENDED MOUNTING FLANGE TORQUE
All Sizes	#10-32 x 3/8	16 - 20 in-lbs	#10-32 x 5/8	20 - 24 in-lbs	1/4-20 x 1/2	10 - 14 in-lbs	25 - 30 in-lbs

PolyStar® Series – Opaque & Clear Cover

CATALOG NUMBER	OVERALL H X W X D	INSIDE A X B X C	MOUNTING HOR. E X F	MOUNTING VER. E X F	MOUNTING 45 E X F	J	K	L	M	N	SHIP WEIGHT	PANEL NUMBER
PC606 PC606CC	7.41 x 8.68 x 5.84 (188 x 223 x 148)	5.94 x 5.94 x 5.02 (151 x 151 x 127)	3.64 x 8.40 (93 x 213)	8.04 x 3.64 (204 x 93)	6.75 x 6.74 (171 x 171)	4.50 (114)	4.25 (108)	4.25 (108)	8.89 (226)	8.89 (226)	2.50 lbs.	BP66**
PC806 PC806CC	9.41 x 8.68 x 5.86 (239 x 223 x 149)	7.97 x 5.97 x 5.07 (202 x 152 x 129)	5.64 x 8.04 (143 x 213)	10.04 x 3.64 (255 x 93)	8.76 x 6.75 (223 x 171)	4.56 (116)	6.25 (159)	4.25 (108)	10.89 (277)	8.89 (226)	3.19 lbs.	BP86**
PC808 PC808CC	9.41 x 10.68 x 5.86 (239 x 271 x 149)	7.97 x 7.97 x 5.03 (202 x 202 x 128)	5.63 x 10.03 (143 x 255)	10.04 x 5.63 (255 x 143)	8.74 x 8.78 (222 x 223)	4.53 (115)	6.25 (159)	6.25 (159)	10.88 (277)	10.88 (277)	3.75 lbs.	BP88**
PC1008 PC1008CC	11.41 x 10.68 x 6.36 (290 x 271 x 161)	9.96 x 7.96 x 5.57 (253 x 202 x 142)	7.64 x 10.04 (194 x 255)	12.04 x 5.64 (306 x 143)	10.76 x 8.75 (273 x 222)	5.05 (128)	8.25 (210)	6.25 (159)	12.89 (327)	10.89 (277)	4.31 lbs.	BP108**
PC100806 PC100806CC	11.41 x 10.68 x 7.89 (209 x 271 x 200)	9.95 x 7.95 x 7.06 (253 x 202 x 179)	7.63 x 10.03 (194 x 255)	12.03 x 5.63 (306 x 143)	10.76 x 8.75 (273 x 222)	6.54 (166)	8.25 (210)	6.25 (159)	12.88 (327)	10.88 (277)	5.2 lbs.	BP108**
PC1010 PC1010CC	11.41 x 12.68 x 6.97 (209 x 322 x 177)	9.95 x 9.95 x 6.15 (253 x 253 x 156)	7.63 x 12.03 (194 x 306)	12.03 x 7.63 (306 x 194)	10.76 x 10.75 (273 x 273)	5.65 (144)	8.25 (210)	8.25 (210)	12.88 (327)	12.88 (327)	5.7 lbs.	BP1010**
PC1210 PC1210CC	13.40 x 12.68 x 7.86 (340 x 322 x 200)	11.95 x 9.95 x 7.07 (304 x 253 x 180)	9.64 x 12.04 (245 x 306)	14.04 x 7.64 (357 x 194)	12.76 x 10.75 (324 x 273)	6.56 (167)	10.25 (260)	8.25 (210)	14.89 (378)	12.89 (327)	6.19 lbs.	BP1210**
PC1412 PC1412CC	15.40 x 14.68 x 7.86 (391 x 373 x 200)	13.95 x 11.95 x 7.07 (354 x 304 x 180)	11.64 x 14.04 (296 x 357)	16.04 x 9.64 (407 x 245)	14.76 x 12.75 (375 x 324)	6.56 (167)	12.25 (311)	10.25 (260)	16.89 (429)	14.89 (378)	7.99 lbs.	BP1412**
PC1614 PC1614CC	17.65 x 16.68 x 9.98 (448 x 424 x 253)	15.93 x 13.93 x 9.20 (405 x 354 x 234)	13.64 x 16.04 (347 x 407)	18.04 x 11.64 (458 x 296)	16.76 x 14.75 (426 x 375)	8.68 (220)	14.25 (362)	12.25 (311)	18.89 (480)	16.89 (429)	10.00 lbs.	BP1614**
PC1816 PC1816CC	19.41 x 18.68 x 11.90 (493 x 474 x 302)	17.83 x 15.83 x 11.08 (453 x 402 x 281)	15.64 x 18.04 (397 x 458)	20.04 x 13.64 (509 x 347)	18.75 x 16.74 (476 x 425)	10.56 (268)	16.25 (413)	14.25 (362)	20.89 (531)	18.89 (480)	11.25 lbs.	BP1816**
PC181604* PC181604CC*	19.41 x 18.68 x 5.41 (493 x 474 x 137)	18.16 x 16.16 x 5.08 (461 x 410 x 129)	N/A	20.50 x 13.50 (521 x 343)	N/A	4.56 (116)	16.25 (413)	14.25 (362)	21.75 (552)	N/A	11.00 lbs.	BP1816**
PC2016 PC2016CC	21.41 x 18.68 x 9.97 (544 x 474 x 253)	19.86 x 15.86 x 9.15 (504 x 403 x 232)	18.75 x 19.17 (476 x 487)	23.15 x 14.75 (588 x 375)	21.91 x 17.87 (557 x 454)	8.65 (220)	18.25 (464)	14.25 (362)	24.00 (610)	20.02 (509)	14.00 lbs.	BJP2016**
PC2424* PC2424CC*	25.41 x 26.68 x 11.41 (645 x 678 x 290)	23.91 x 23.91 x 11.88 (607 x 607 x 302)	N/A	25.69 x 18.00 (653 x 457)	N/A	10.56 (268)	22.25 (565)	22.25 (565)	26.69 (678)	21.86 (555)	23.60 lbs.	BP2424PC**

All measures are in inches, items in parentheses are in millimeters.

**Does not exhibit same mounting foot design. Mounting feet are molded into the box rather than installed separately.*

***Panel sold separately*

**** Available with stainless steel latches by placing SS at the end of the part number. Ex: PC1210SS*

Panel Kits & Accessories

DRK DIN Rails

Kit includes DIN rail that fits size indicated, plus two custom slot nuts and two thread forming screws for mounting to back of enclosure.

CATALOG #	FITS
PC6DRK	6”
PC8DRK	8”
PC10DRK	10”
PC12DRK	12”
PC14DRK	14”
PC16DRK	16”
PC18DRK	18”
PC20DRK	20”
PC24DRK	24”

DR DIN Rails

Kit includes a DIN rail that fits size indicated, plus two trilobular screws.

CATALOG #	FITS
PC6DR	6”
PC8DR	8”
PC10DR	10”
PC12DR	12”
PC14DR	14”
PC16DR	16”
PC18DR	18”
PC20DR	20”
PC24DR	24”

Aluminum Swing Panel Kits

CATALOG #	FITS
PC606SPK	6 x 6
PC806SPK	8 x 6
PC808SPK	8 x 8
PC1008SPK	10 x 8
PC1010SPK	10 x 10
PC1210SPK	12 x 10
PC1412SPK	14 x 12
PC1614SPK	16 x 14
PC1816SPK	18 x 16
PC2016SPK	20 x 16
PC2424SPK	24 x 24

SWING PANEL KIT

Accessories

CATALOG #	DESCRIPTION
PCSNK	Slot Nut Kit (includes two nuts & two screws)
PCSPMK	Swing Panel Mounts (4 per kit)
PCLATCHKIT	Latch Kit (2 latches per kit) – replacement only
PCACCESSORYKIT	Accessory Kit (includes all screws, inserts and mounting feet) – replacement only
PCLATCHKITSS	Stainless Steel Latch Kit

SLOT NUT KIT – PCSNK

LATCH KIT – PCLATCHKIT

LATCH KIT – PCLATCHKITSS

14” DIN RAIL WITH 2 SCREWS – PC_ _ DR

SWING PANEL MOUNTS – PCSPMK

ACCESSORY KIT – PCACCESSORYKIT

14” DIN RAIL WITH 2 CUSTOM SLOT NUTS AND FORMING SCREWS – PC_ _ DRK

J & JW Series

J & JW Series

The **J Series** enclosures follow the original design of fiberglass enclosure products featuring a modest overhang cover on a flange mounted base. This simple but elegant concept offers unobstructed side-walls, built in mounting capabilities and the strength characteristics associated with a protective wrap around cover that is hinged, latched or screwed down.

Stahlin's **J Series** enclosures are designed for general electrical and electronic applications and any application that has associated environmental concerns. Simple in its design, the enclosure can be configured with cutouts, windows and modifications that make your finished product truly unique.

J Series products enhance any instrument installation. They accommodate standard back panel mounting but offer a range of panels, including an elevated dead front panel that is highly visible through a cover mounted window.

Product Configurations

J SERIES

HPL	HW	W	HLL	FHW	3PT
HINGED, PADLOCK LATCH	HINGED, 2 COVER SCREWS	4 COVER SCREWS, LIFT OFF COVER	HINGED, TWIST LATCH	FIBERGLASS HINGE, FOUR COVER SCREWS	HINGED, LOCKABLE SWING HANDLE

JW SERIES

HPL	HLL
HINGED, PADLOCK LATCH	HINGED, TWIST LATCH

Attributes

- Available in 2 cover options on certain size enclosures:
  1. Opaque cover
  2. Flush bonded window
- Overhang cover on smooth sided base
- High temperature, flame retardant, non-corrosive
- All stainless hardware latches and screws
- Full length stainless steel hinge
- Chemically resistant fiberglass reinforced polyester
- Non-corrosive, environmental designs
- Stainless steel retention chain on screw covers
- Continuous polyurethane gasket

Industry Standards

NEMA 250, UL Listed UL50, UL50e, UL508A	File E64358 Type 1, 3R, 4X, 6P*, 12
CSA Std C22.2	File LR069014 Type 1, 3R, 4X, 6P*, 12
IEC 60529	File E362920 IP66 IP 6X for 3PT
UL1741	File E333478 W, HW, HPL, FHW
Plenum Space (UL2043) Compliant	Yes
Temperature Range	(-76°F to +274°F) (-60°C to +134°C)
Temperature Range Window	(-26°F to +170°F) (-32°C to +76°C)
Temperature Range Clear Cover	(-30°F to +248°F) (-34°C to +120°C)
Flammability Rating	UL94-5V
Impact Rating	IK10
Self Extinguishing	Non-haloginated, non-flame propagating
Chemical Resistance	Full chemical resistance charts listed in appendix
NFPA No. 101 Flame Spread	Class A (1)
Outdoor UV Exposure	(f1) Rated
Color	Available standard glacier grey (PMS 428c) and certain sizes and configurations standard in white.

** Available on select sizes.*

Opaque Cover

HPL **CONFIGURATION**
Hinged, padlock latch

HPL Construction

Material	SolarGuard® – Hot compression molded fiberglass reinforced polyester (thermoset)
Gasket	Poured polyurethane seamless gasket provides watertight, dust-tight environmental seal.
Stainless Steel Hardware	300 Series stainless used on all external hardware.
Molded in Mounting Flange	Molded in flange for ease of mounting.
Mounting Bosses	Panel mounting capability for fixed rear panel.
Metal Inserts	Back panel utilizes threaded brass inserts accepting 10-32 screws.
Soft Edge Design	Rounded edges, minimal protrusions or exposed pocket areas for assembly of dust and debris.
Color	Available standard glacier grey (PMS 428C) or White*.

HPL Modifications

Custom Colors	pg. 21-22
Silk Screening	pg. 21-22
EMI/RFI Shielding	pg. 21-22
Custom Window	pg. 21-22
Custom Cutouts/Holes	pg. 21-22

HPL Industry Standards

NEMA 250, UL Listed UL50, UL50e, UL508A	File E64358 Type 1, 3R, 4X, 6P*, 12
CSA Std C22.2	File LR069014; Type 1, 3R, 4X, 6P*, 12
IEC 60529	File E362920 IP66; IP 6X for 3PT
UL1741	File E333478; W, HW, HPL, FHW
Plenum Space (UL2043) Compliant	Yes
Temperature Range	(-76°F to +274°F) (-60°C to +134°C)
Flammability Rating	UL94-5V
Impact Rating	IK10
Self Extinguishing	Non-haloginated, non-flame propagating
Chemical Resistance	Full chemical resistance charts listed in appendix
NFPA No. 101 Flame Spread	Class A (1)
Outdoor Exposure UL746C	(f1) Rated

HPL Accessories

PANELS	**Aluminum**	BP_AL	pg. 174-175
	Fiberglass	BP_FG	pg. 174-175
	Stainless Steel	BP_SS	pg. 174-175
	Carbon Steel	BP_CS	pg. 174-175
	Dead Front Panels		pg. 180-181
ACCESSORIES	**Drain & Breather Vents**		pg. 185
	Hole Plugs		pg. 187
	Assorted Hubs and Cord Grips		pg. 188-189
	All Other Accessories		pg. 184-194

** Consult Factory on available sizes.*

Opaque Cover

CONFIGURATION
Hinged, 2 cover screws HW

HW Construction

Material	SolarGuard® – Hot compression molded fiberglass reinforced polyester (thermoset)
Gasket	Poured polyurethane seamless gasket provides watertight, dust-tight environmental seal.
Pan Head Screws	Minimized protruding surfaces
Stainless Steel Hardware	300 Series stainless used on all external hardware.
Molded in Mounting Flange	Molded in flange for ease of mounting.
Mounting Bosses	Panel mounting capability for fixed rear panel.
Metal Inserts	Back panel utilizes threaded brass inserts accepting 10-32 screws; cover accepting 10-24 screws.
Soft Edge Design	Rounded edges, minimal protrusions or exposed pocket areas for assembly of dust and debris.
Color	Available Standard in Glacier Grey (PMS 428C) or White*.

HW Modifications

Custom Colors	pg. 21-22
Silk Screening	pg. 21-22
EMI/RFI Shielding	pg. 21-22
Custom Window	pg. 21-22
Custom Cutouts/Holes	pg. 21-22

HW Industry Standards

NEMA 250, UL Listed UL50, UL50e, UL508A	File E64358 Type 1, 3R, 4X, 6P*, 12
CSA Std C22.2	File LR069014; Type 1, 3R, 4X, 6P*, 12
IEC 60529	File E362920 IP66; IP 6X for 3PT
UL1741	File E333478; W, HW, HPL, FHW
Plenum Space (UL2043) Compliant	Yes
Temperature Range	(-76°F to +274°F) (-60°C to +134°C)
Flammability Rating	UL94-5V
Impact Rating	IK10
Self Extinguishing	Non-haloginated, non-flame propagating
Chemical Resistance	Full chemical resistance charts listed in appendix
NFPA No. 101 Flame Spread	Class A (1)
Outdoor Exposure UL746C	(f1) Rated

HW Accessories

PANELS	**Aluminum**	BP_AL	pg. 174-175
	Fiberglass	BP_FG	pg. 174-175
	Stainless Steel	BP_SS	pg. 174-175
	Carbon Steel	BP_CS	pg. 174-175
	Dead Front Panels		pg. 180-181
ACCESSORIES	**Drain & Breather Vents**		pg. 185
	Hole Plugs		pg. 187
	Assorted Hubs and Cord Grips		pg. 188-189
	All Other Accessories		pg. 184-194

** Consult Factory on available sizes.*

Opaque Cover

W **CONFIGURATION**
4 cover screws, lift off cover

W Construction

Material	SolarGuard® – Hot compression molded fiberglass reinforced polyester (thermoset)
Gasket	Poured polyurethane seamless gasket provides watertight, dust-tight environmental seal
Pan Head Screws	Minimized protruding surfaces
Stainless Steel Hardware	300 Series stainless used on all external hardware
Molded in Mounting Flange	Molded in flange for ease of mounting
Mounting Bosses	Panel mounting capability for fixed rear panel
Metal Inserts	Back panel utilizes threaded brass inserts accepting 10-32 screws; cover accepting 10-24 screws
Soft Edge Design	Rounded edges, minimal protrusions or exposed pocket areas for assembly of dust and debris
Cover Retention Chain	Stainless steel beaded chain for securing cover after lift off
Color	Available standard glacier grey (PMS 428C)

W Modifications

Custom Colors	pg. 21-22
Silk Screening	pg. 21-22
EMI/RFI Shielding	pg. 21-22
Custom Window	pg. 21-22
Custom Cutouts/Holes	pg. 21-22

W Industry Standards

NEMA 250, UL Listed UL50, UL50e, UL508A	File E64358 Type 1, 3R, 4X, 6P*, 12
CSA Std C22.2	File LR069014; Type 1, 3R, 4X, 6P*, 12
IEC 60529	File E362920 IP66; IP 6X for 3PT
UL1741	File E333478; W, HW, HPL, FHW
Plenum Space (UL2043) Compliant	Yes
Temperature Range	(-76°F to +274°F) (-60°C to +134°C)
Flammability Rating	UL94-5V
Impact Rating	IK10
Self Extinguishing	Non-haloginated, non-flame propagating
Chemical Resistance	Full chemical resistance charts listed in appendix
NFPA No. 101 Flame Spread	Class A (1)
Outdoor Exposure UL746C	(f1) Rated

W Accessories

PANELS	**Aluminum**	BP_AL	pg. 174-175
	Fiberglass	BP_FG	pg. 174-175
	Stainless Steel	BP_SS	pg. 174-175
	Carbon Steel	BP_CS	pg. 174-175
	Dead Front Panels		pg. 180-181
ACCESSORIES	**Drain & Breather Vents**		pg. 185
	Hole Plugs		pg. 187
	Assorted Hubs and Cord Grips		pg. 188-189
	All Other Accessories		pg. 184-194

** Consult Factory on available sizes.*

Opaque Cover

CONFIGURATION
Hinged, twist latch HLL

HLL Construction

Material	SolarGuard® – Hot compression molded fiberglass reinforced polyester (thermoset)
Gasket	Poured polyurethane seamless gasket provides watertight, dust-tight environmental seal
Stainless Steel Hardware	300 Series stainless used on all external hardware
Molded in Mounting Flange	Molded in flange for ease of mounting
Mounting Bosses	Panel mounting capability for fixed rear panel
Metal Inserts	Back panel utilizes threaded brass inserts accepting 10-32 screws
Soft Edge Design	Rounded edges, minimal protrusions or exposed pocket areas for assembly of dust and debris
Color	Available standard glacier grey (PMS 428C)

HLL Modifications

Custom Colors	pg. 21-22
Silk Screening	pg. 21-22
EMI/RFI Shielding	pg. 21-22
Custom Window	pg. 21-22
Custom Cutouts/Holes	pg. 21-22

HLL Industry Standards

NEMA 250, UL Listed UL50, UL50e, UL508A	File E64358 Type 1, 3R, 4X, 6P*, 12
CSA Std C22.2	File LR069014; Type 1, 3R, 4X, 6P*, 12
IEC 60529	File E362920 IP66; IP 6X for 3PT
UL1741	File E333478; W, HW, HPL, FHW
Plenum Space (UL2043) Compliant	Yes
Temperature Range	(-76°F to +274°F) (-60°C to +134°C)
Flammability Rating	UL94-5V
Impact Rating	IK10
Self Extinguishing	Non-haloginated, non-flame propagating
Chemical Resistance	Full chemical resistance charts listed in appendix
NFPA No. 101 Flame Spread	Class A (1)
Outdoor Exposure UL746C	(f1) Rated

HLL Accessories

PANELS	**Aluminum**	BP_AL	pg. 174-175
	Fiberglass	BP_FG	pg. 174-175
	Stainless Steel	BP_SS	pg. 174-175
	Carbon Steel	BP_CS	pg. 174-175
	Dead Front Panels		pg. 180-181
ACCESSORIES	**Drain & Breather Vents**		pg. 185
	Hole Plugs		pg. 187
	Assorted Hubs and Cord Grips		pg. 188-189
	All Other Accessories		pg. 184-194

** Consult Factory on available sizes.*

J & JW Series

Opaque Cover

FHW **CONFIGURATION**
Fiberglass hinge, 4 cover screws

FHW Construction

Material	SolarGuard® – Hot compression molded fiberglass reinforced polyester (thermoset)
Gasket	Poured polyurethane seamless gasket provides watertight, dust-tight environmental seal
Pan Head Screws	Minimized protruding surfaces
Stainless Steel Hardware	300 Series stainless used on all external hardware
Molded in Mounting Flange	Molded in flange for ease of mounting
Mounting Bosses	Panel mounting capability for fixed rear panel
Metal Inserts	Back panel utilizes threaded brass inserts accepting 10-24 screws.
Soft Edge Design	Rounded edges, minimal protrusions or exposed pocket areas for assembly of dust and debris
Hinge Material	Glass filled Polybutylene Terephthalate (PBT)
Color	Available standard glacier grey (PMS 428C)

FHW Modifications

Custom Colors	pg. 21-22
Silk Screening	pg. 21-22
EMI/RFI Shielding	pg. 21-22
Custom Window	pg. 21-22
Custom Cutouts/Holes	pg. 21-22

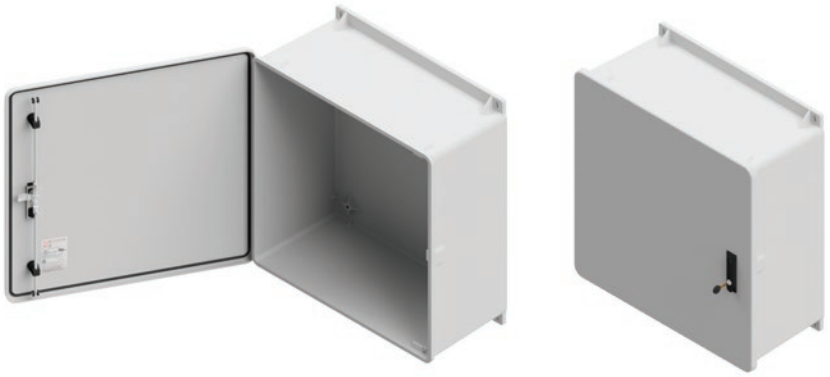
FHW Industry Standards

NEMA 250, UL Listed UL50, UL50e, UL508A	File E64358 Type 1, 3R, 4X, 6P*, 12
CSA Std C22.2	File LR069014; Type 1, 3R, 4X, 6P*, 12
IEC 60529	File E362920 IP66; IP 6X for 3PT
UL1741	File E333478; W, HW, HPL, FHW
Plenum Space (UL2043) Compliant	Yes
Temperature Range	(-76°F to +274°F) (-60°C to +134°C)
Flammability Rating	UL94-5V
Impact Rating	IK10
Self Extinguishing	Non-halogenated, non-flame propagating
Chemical Resistance	Full chemical resistance charts listed in appendix
NFPA No. 101 Flame Spread	Class A (1)
Outdoor Exposure UL746C	(f1) Rated

FHW Accessories

PANELS	**Aluminum**	BP_AL	pg. 174-175
	Fiberglass	BP_FG	pg. 174-175
	Stainless Steel	BP_SS	pg. 174-175
	Carbon Steel	BP_CS	pg. 174-175
	Dead Front Panels		pg. 180-181
ACCESSORIES	**Drain & Breather Vents**		pg. 185
	Hole Plugs		pg. 187
	Assorted Hubs and Cord Grips		pg. 188-189
	All Other Accessories		pg. 184-194

** Consult Factory on available sizes.*



Opaque Cover

CONFIGURATION
Hinged, lockable swing handle 3PT

3PT Construction

Material	SolarGuard® – Hot compression molded fiberglass reinforced polyester (thermoset)
Gasket	Poured polyurethane seamless gasket provides watertight, dust-tight environmental seal.
Stainless Steel Hardware	300 Series stainless used on all external hardware.
Molded in Mounting Flange	Molded in flange for ease of mounting.
Mounting Bosses	Panel mounting capability for fixed rear panel.
Metal Inserts	Back panel utilizes threaded brass inserts accepting 10-32 screws. 1/4"-20
Soft Edge Design	Rounded edges, minimal protrusions or exposed pocket areas for assembly of dust and debris.
Color	Available standard glacier grey (PMS 428C)*

3PT Modifications

Custom Colors	pg. 21-22
Silk Screening	pg. 21-22
EMI/RFI Shielding	pg. 21-22
Custom Window	pg. 21-22
Custom Cutouts/Holes	pg. 21-22

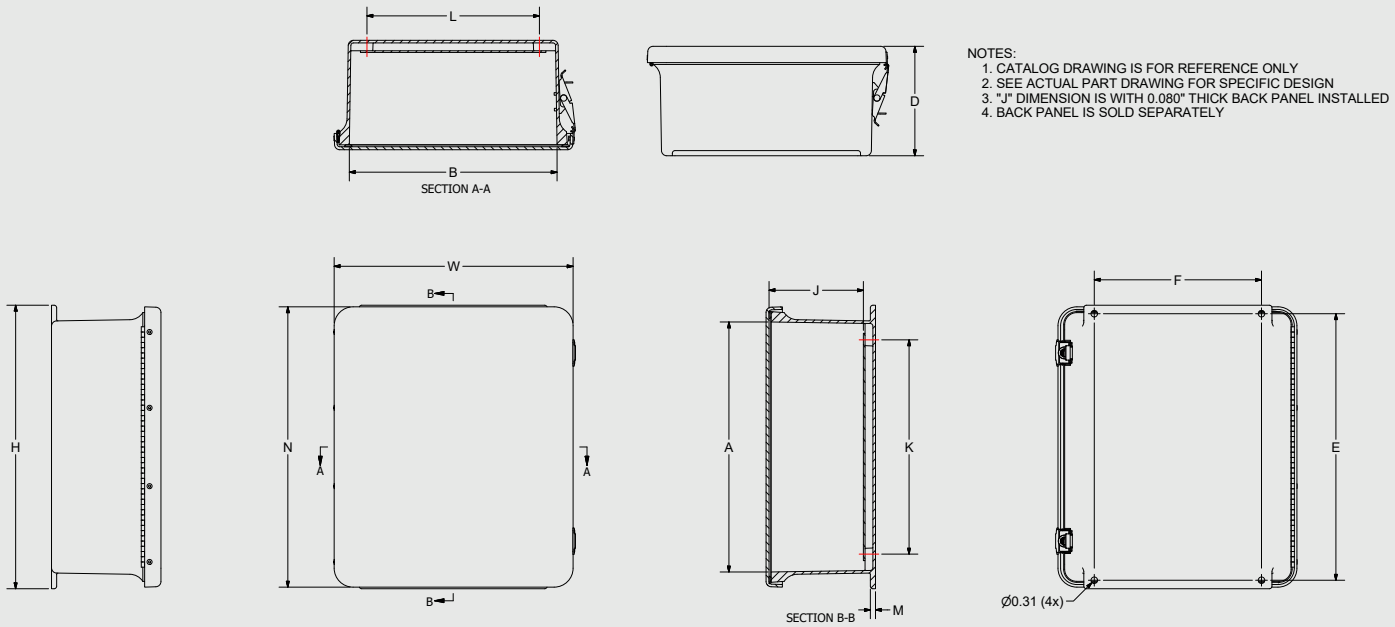
3PT Industry Standards

NEMA 250, UL Listed UL50, UL50e, UL508A	File E64358 Type 1, 3, 3R, 4, 4X, 12, 13
CSA Std C22.2	File LR069014 Type 1, 3, 3R, 4, 4X, 12, 13
IEC 60529	File E362920 IP66; IP 6X for 3PT
Temperature Range	(-76°F to +274°F) (-60°C to +134°C)
Flammability Rating	UL94-5V
Impact Rating	IK10
Self Extinguishing	Non-haloginated, non-flame propagating
Chemical Resistance	Full chemical resistance charts listed in appendix
NFPA No. 101 Flame Spread	Class A (1)

3PT Accessories

PANELS	**Aluminum**	BP_AL	pg. 174-175
	Fiberglass	BP_FG	pg. 174-175
	Stainless Steel	BP_SS	pg. 174-175
	Carbon Steel	BP_CS	pg. 174-175
	Dead Front Panels		pg. 180-181
ACCESSORIES	**Drain & Breather Vents**		pg. 185
	Hole Plugs		pg. 187
	Assorted Hubs and Cord Grips		pg. 188-189
	All Other Accessories		pg. 184-194

** Consult Factory on available sizes.*



SCREW SIZES & TORQUE VALUES

PRODUCT SIZES	BACK PANEL SCREW SIZE	BACK PANEL RECOMMENDED TORQUE	COVER SCREW SIZE	COVER SCREW RECOMMENDED TORQUE	RECOMMENDED MOUNTING FLANGE TORQUE
J604 up to J2016	#10-32 x 3/8	16 - 20 in-lbs	#10-24 x 5/8	20 - 24 in-lbs	45 in-lbs max
J2020 up to J2424	1/4-20 x 1/2	20 - 24 in-lbs	N/A	N/A	80 in-lbs max

J Series – Opaque Cover

CATALOG NUMBER	OVERALL H X W X D	INSIDE A X B X C	MOUNTING E X F	J	K	L	M	N	HOLE DIAMETER	SHIP WEIGHT	PANEL NUMBER
J604HPL*** J604HW*** J604W J604HLL	7.47 x 5.45 x 4.70 (190 x 138 x 119)	5.84 x 3.85 x 4.45 (148 x 98 x 113)	6.75 x 2.00 (171 x 51)	3.97 (101)	4.25 (108)	2.25 (57)	0.25 (6)	7.39 (188)	0.31 (8)	2.40 lbs.	BP64**
J606HPL*** J606HW*** J606W J606HLL	7.50 x 7.53 x 4.82 (191 x 191 x 122)	5.72 x 5.72 x 4.45 (145 x 145 x 113)	6.75 x 4.00 (171 x 101)	3.97 (101)	4.25 (108)	4.25 (108)	0.25 (6)	7.53 (191)	0.31 (8)	2.80 lbs.	BP66**
J806HPL*** J806HW*** J806W J806HLL J806FHW	9.63 x 7.52 x 4.70 (245 x 191 x 119)	7.73 x 5.74 x 4.45 (196 x 146 x 113)	8.88 x 4.00 (225 x 101)	3.92 (100)	6.25 (159)	4.25 (108)	0.25 (6)	9.5 (242)	0.31 (8)	3.50 lbs.	BP86**
J808HPL*** J808HW*** J808W J808HLL	9.56 x 9.38 x 4.87 (243 x 238 x 124)	7.73 x 7.73 x 4.62 (196 x 196 x 117)	8.75 x 6.00 (222 x 152)	3.98 (101)	6.25 (159)	6.25 (159)	0.25 (6)	9.38 (238)	0.31 (8)	3.80 lbs.	BP88**

All measures are in inches, items in parentheses are in millimeters.

**Crowned cover – center of cover raised 3/4"*

***Panel sold separately*

****Available in white by placing WH prior to part number. Ex: WH-J604HW*

J Series – Opaque Cover

CATALOG NUMBER	OVERALL H X W X D	INSIDE A X B X C	MOUNTING E X F	J	K	L	M	N	HOLE DIA.	SHIP WEIGHT	PANEL NUMBER
J1008HPL*** J1008HW*** J1008W J1008HLL	11.63 x 9.41 x 4.22 (295 x 239 x 107)	9.73 x 7.73 x 3.98 (247 x 196 x 101)	10.75 x 6.00 (273 x 152)	3.44 (87)	8.25 (210)	6.25 (159)	0.25 (6)	11.35 (288)	0.31 (8)	4.60 lbs.	BP108**
J1008HWA* J1008WA* J1008HALL*	11.63 x 9.37 x 5.05 (295 x 238 x 129)	9.73 x 7.73 x 4.83 (247 x 196 x 123)	10.75 x 6.00 (273 x 152)	4.38 (111)	8.25 (210)	6.25 (159)	0.25 (6)	11.38 (289)	0.31 (8)	4.70 lbs.	BP108**
J100806HPL*** J100806HW*** J100806W J100806HLL	11.97 x 9.42 x 6.61 (304 x 239 x 165)	9.74 x 7.74 x 6.25 (248 x 197 x 159)	10.94 - 10.75 x 6.00 (278 - 273 x 152)	5.67 (141)	8.25 (210)	6.25 (159)	0.25 (6)	11.42 (290)	0.31 (8)	5.20 lbs.	BP108**
J1210HPL*** J1210HW*** J1210W J1210HLL J1210FHW	13.56 x 11.43 x 5.22 (344 x 291 x 133)	11.79 x 9.80 x 4.94 (299 x 249 x 125)	12.75 x 8.00 (324 x 203)	4.50 (114)	10.25 (260)	8.25 (210)	0.25 (6)	13.41 (341)	0.31 (8)	6.60 lbs.	BP1210**
J1212HPL*** J1212HW*** J1212W J1212HLL	13.56 x 13.38 x 6.34 (344 x 340 x 161)	11.70 x 11.70 x 6.10 (297 x 297 x 155)	12.75 x 10.00 (324 x 254)	5.51 (140)	10.25 (260)	10.25 (260)	0.25 (6)	13.38 (340)	0.31 (8)	8.40 lbs.	BP1212**
J1407HPL*** J1407HW*** J1407W J1407HLL	15.87 x 8.75 x 6.81 (403 x 222 x 173)	14.00 x 7.00 x 6.56 (356 x 178 x 167)	15.00 x 5.00 (381 x 127)	6.11 (155)	12.25 (311)	5.25 (133)	0.25 (6)	15.75 (400)	0.31 (8)	6.10 lbs.	BP1407**
J1412HPL*** J1412HW*** J1412W J1412HLL J1412FHW	15.50 x 13.48 x 6.20 (394 x 342 x 158)	13.52 x 11.52 x 5.94 (343 x 293 x 151)	14.63 x 10.00 (372 x 254)	5.36 (137)	12.25 (311)	10.25 (260)	0.25 (6)	15.48 (393)	0.31 (8)	9.90 lbs.	BP1412**
J1614HPL*** J1614HW*** J1614W J1614HLL J1614FHW	17.53 x 15.46 x 6.21 (445 x 393 x 157)	15.60 x 13.56 x 5.94 (396 x 344 x 151)	16.75 x 12.00 (425 x 305)	5.35 (136)	14.25 (362)	12.25 (311)	0.25 (6)	17.46 (444)	0.31 (8)	12.20 lbs.	BP1614**
J1816HPL*** J1816HW*** J1816W J1816HLL J1816FHW	19.63 x 17.63 x 8.81 (499 x 447 x 224)	17.69 x 15.69 x 8.45 (449 x 399 x 215)	18.88 x 12.00 (479 x 305)	7.98 (203)	16.25 (413)	14.25 (362)	0.25 (6)	19.61 (498)	0.31 (8)	20.00 lbs.	BP1816**
J2016HPL*** J2016HW*** J2016W J2016HLL	22.00 x 17.68 x 8.81 (559 x 449 x 224)	19.72 x 15.72 x 8.45 (501 x 399 x 215)	21.25 x 10.00 (540 x 254)	7.98 (203)	18.25 (464)	14.25 (362)	0.25 (6)	21.68 (551)	0.31 (8)	22.50 lbs.	BPJ2016**
J2020HPL J20203PT	23.50 x 22.12 x 11.70 (597 x 562 x 297)	19.88 x 19.88 x 11.33 (505 x 505 x 288)	21.88 x 18.30 (556 x 465)	10.49 (266)	15.25 (387)	15.25 (387)	0.50 (13)	22.1 (561)	0.44 x 0.38 (11 x 10)	30 lbs.	BPJ2020**
J2420HPL J24203PT	27.50 x 22.12 x 11.70 (699 x 562 x 297)	23.88 x 19.88 x 11.33 (607 x 505 x 288)	25.88 x 18.30 (657 x 465)	10.49 (266)	19.25 (489)	15.25 (387)	0.50 (13)	26.1 (663)	0.44 x 0.38 (11 x 10)	36 lbs.	BPJ2420**
J2424HPL J24243PT	27.50 x 26.12 x 11.70 (699 x 663 x 297)	23.88 x 23.88 x 11.33 (607 x 607 x 288)	25.88 x 22.00 (657 x 559)	10.49 (266)	19.25 (489)	19.25 (489)	0.50 (13)	26.1 (663)	0.44 x 0.38 (11 x 10)	42 lbs.	BPJ2424**

All measures are in inches, items in parentheses are in millimeters.

**Crowned cover – center of cover raised 3/4"*

***Panel sold separately*

****Available in white by placing WH prior to part number. Ex: WH-J604HW*

J & JW Series

Expanded "J" Opaque Cover

HPL **CONFIGURATION**
Hinged, padlock latch

HPL Construction

Material	SolarGuard® – Hot compression molded fiberglass reinforced polyester (thermoset)
Gasket	Poured polyurethane seamless gasket provides watertight, dust-tight environmental seal
Stainless Steel Hardware	300 Series stainless used on all external hardware
Molded in Mounting Feet	Molded in mounting feet for ease of mounting
Mounting Bosses	Panel mounting capability for fixed rear panel
Metal Inserts	Back panel utilizes threaded brass inserts accepting 3/8"- 16 screws
Soft Edge Design	Rounded edges, minimal protrusions or exposed pocket areas for assembly of dust and debris
Color	Available standard glacier grey (PMS 428C)

HPL Industry Standards

NEMA 250, UL Listed UL50, UL50e, UL508A	File E64358 Type 1, 3R, 4X, 6P*, 12
CSA Std C22.2	File LR069014; Type 1, 3R, 4X, 6P*, 12
IEC 60529	File E362920 IP66; IP 6X for 3PT
UL1741	File E333478; W, HW, HPL, FHW
Plenum Space (UL2043) Compliant	Yes
Temperature Range	(-76°F to +274°F) (-60°C to +134°C)
Flammability Rating	UL94-5V
Impact Rating	IK10
Self Extinguishing	Non-haloginated, non-flame propagating
Chemical Resistance	Full chemical resistance charts listed in appendix
NFPA No. 101 Flame Spread	Class A (1)
Outdoor Exposure UL746C	(f1) Rated

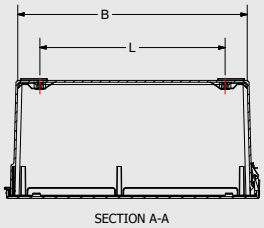
HPL Modifications

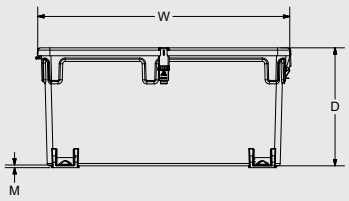
Custom Colors	pg. 21-22
Silk Screening	pg. 21-22
EMI/RFI Shielding	pg. 21-22
Custom Window	pg. 21-22
Custom Cutouts/Holes	pg. 21-22

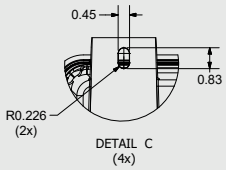
HPL Accessories

PANELS	**Aluminum**	BP_AL	pg. 174-175
	Fiberglass	BP_FG	pg. 174-175
	Stainless Steel	BP_SS	pg. 174-175
	Carbon Steel	BP_CS	pg. 174-175
	Dead Front Panels		pg. 180-181
ACCESSORIES	**Drain & Breather Vents**		pg. 185
	Hole Plugs		pg. 187
	Assorted Hubs and Cord Grips		pg. 188-189
	All Other Accessories		pg. 184-194

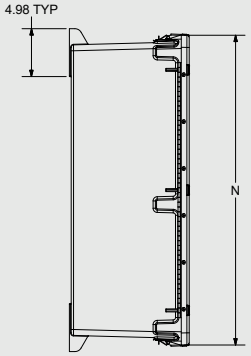
** Consult Factory on available sizes.*

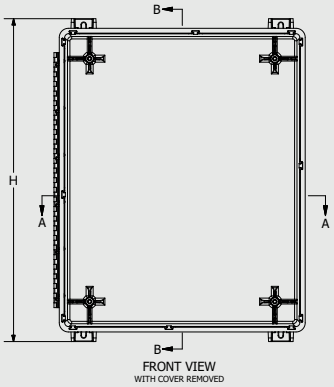


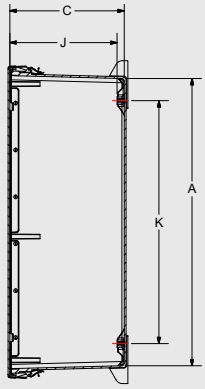


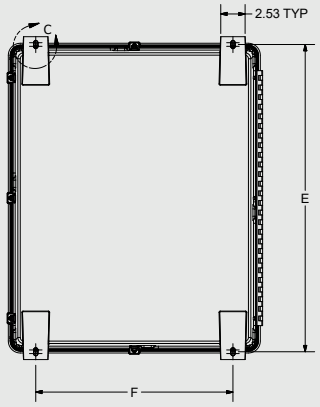


NOTES:
1. CATALOG DRAWING IS FOR REFERENCE ONLY
2. SEE ACTUAL PART DRAWING FOR SPECIFIC DESIGN
3. NOTE J DIMENSION IS WITH AL 0.128" THICK BACK PANEL INSTALLED; BACK PANEL NOT SHOWN
4. BACK PANEL IS SOLD SEPARATELY









SCREW SIZES & TORQUE VALUES

PRODUCT SIZES	BACK PANEL SCREW SIZE	BACK PANEL RECOMMENDED TORQUE	COVER SCREW SIZE	COVER SCREW RECOMMENDED TORQUE	RECOMMENDED MOUNTING FLANGE TORQUE
J3024	3/8-16 x 1/2	28 - 32 in-lbs	N/A	N/A	80 in-lbs max

J Series – Expanded J Opaque Cover

CATALOG NUMBER	OVERALL H X W X D	INSIDE A X B X C	MOUNTING E X F	J	K	L	M	N	HOLE DIA.	SHIP WEIGHT	PANEL NUMBER
J3024HPL	33.56 x 26.18 x 12.26	29.85 x 23.85 x 11.89	31.93 x 20.49	11.06	25.25	19.25	0.28	32.19		46 lbs.	BPJ3024***
J2430HPL	26.18 x 33.56 x 12.26	23.85 x 29.85 x 11.89	20.49 x 31.93	11.06	19.25	25.25	0.28	26.18		46 lbs.	BPJ3024***

All measures are in inches, items in parentheses are in millimeters.

*Crowned cover – center of cover raised 3/4"

**Panel sold separately

Flush Bonded Window

HPL **CONFIGURATION**
Hinged, padlock latch

HPL Construction

Material	SolarGuard® – Hot compression molded fiberglass reinforced polyester (thermoset)
Gasket	Poured polyurethane seamless gasket provides watertight, dust-tight environmental seal
Stainless Steel Hardware	300 Series stainless used on all external hardware
Molded in Mounting Flange	Molded in flange for ease of mounting.
Mounting Bosses	Panel mounting capability for fixed rear panel
Metal Inserts	Back panel utilizes threaded brass inserts accepting 10-32 screws
Bonded Window	Precision routed flush bonded Super Abrasion Resistant acrylic material for maximum visibility
Color	Available standard glacier grey (PMS 428C)

HPL Modifications

Custom Colors	pg. 21-22
Silk Screening	pg. 21-22
EMI/RFI Shielding	pg. 21-22
Custom Window	pg. 21-22
Custom Cutouts/Holes	pg. 21-22

HPL Industry Standards

NEMA 250, UL Listed UL50, UL50e, UL508A	File E64358 Type 1, 3R, 4X, 6P*, 12
CSA Std C22.2	File LR069014; Type 1, 3R, 4X, 6P*, 12
IEC 60529	File E362920 IP66; IP 6X for 3PT
UL1741	File E333478; W, HW, HPL, FHW
Plenum Space (UL2043) Compliant	Yes
Temperature Range	(-76° F to +274° F) (-60° C to +134° C)
Temperature Range Window	(-26° F to +170° F) (-32° C to +76° C)
Flammability Rating	UL94-5V
Impact Rating	IK10
Self Extinguishing	Non-haloginated, non-flame propagating
Chemical Resistance	Full chemical resistance charts listed in appendix
NFPA No. 101 Flame Spread	Class A (1)
Outdoor Exposure UL746C	(f1) Rated

HPL Accessories

PANELS	**Aluminum**	BP_AL	pg. 174-175
	Fiberglass	BP_FG	pg. 174-175
	Stainless Steel	BP_SS	pg. 174-175
	Carbon Steel	BP_CS	pg. 174-175
	Dead Front Panels		pg. 180-181
ACCESSORIES	**Drain & Breather Vents**		pg. 185
	Hole Plugs		pg. 187
	Assorted Hubs and Cord Grips		pg. 188-189
	All Other Accessories		pg. 184-194

** Consult Factory on available sizes.*

Flush Bonded Window

CONFIGURATION
Hinged, twist latch HLL

HLL Construction

Material	SolarGuard® – Hot compression molded fiberglass reinforced polyester (thermoset)
Gasket	Poured polyurethane seamless gasket provides watertight, dust-tight environmental seal
Stainless Steel Hardware	300 Series stainless used on all external hardware
Molded in Mounting Flange	Molded in flange for ease of mounting.
Mounting Bosses	Panel mounting capability for fixed rear panel
Metal Inserts	Back panel utilizes threaded brass inserts accepting 10-32 screws
Bonded Window	Precision routed flush bonded Super Abrasion Resistant acrylic material for maximum visibility
Color	Available standard glacier grey (PMS 428C)

HLL Modifications

Custom Colors	pg. 21-22
Silk Screening	pg. 21-22
EMI/RFI Shielding	pg. 21-22
Custom Window	pg. 21-22
Custom Cutouts/Holes	pg. 21-22

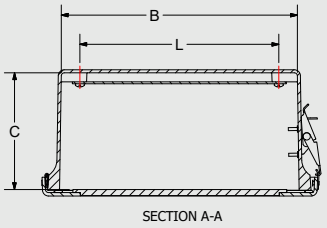
HLL Industry Standards

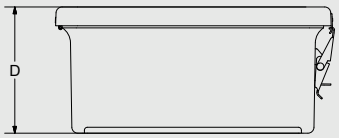
NEMA 250, UL Listed UL50, UL50e, UL508A	File E64358 Type 1, 3R, 4X, 6P*, 12
CSA Std C22.2	File LR069014; Type 1, 3R, 4X, 6P*, 12
IEC 60529	File E362920 IP66; IP 6X for 3PT
UL1741	File E333478; W, HW, HPL, FHW
Plenum Space (UL2043) Compliant	Yes
Temperature Range	(-76°F to +274°F) (-60°C to +134°C)
Temperature Range Window	(-26°F to +170°F) (-32°C to +76°C)
Flammability Rating	UL94-5V
Impact Rating	IK10
Self Extinguishing	Non-haloginated, non-flame propagating
Chemical Resistance	Full chemical resistance charts listed in appendix
NFPA No. 101 Flame Spread	Class A (1)
Outdoor Exposure UL746C	(f1) Rated

HLL Accessories

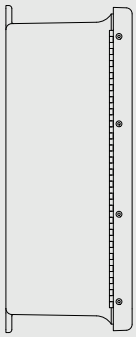
PANELS	**Aluminum**	BP_AL	pg. 174-175
	Fiberglass	BP_FG	pg. 174-175
	Stainless Steel	BP_SS	pg. 174-175
	Carbon Steel	BP_CS	pg. 174-175
	Dead Front Panels		pg. 180-181
ACCESSORIES	**Drain & Breather Vents**		pg. 185
	Hole Plugs		pg. 187
	Assorted Hubs and Cord Grips		pg. 188-189
	All Other Accessories		pg. 184-194

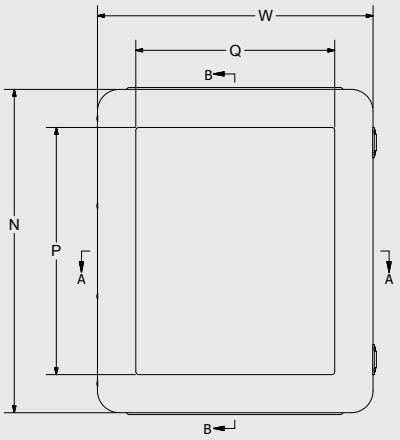
** Consult Factory on available sizes.*

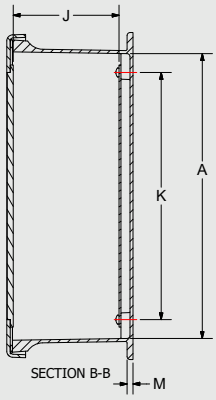


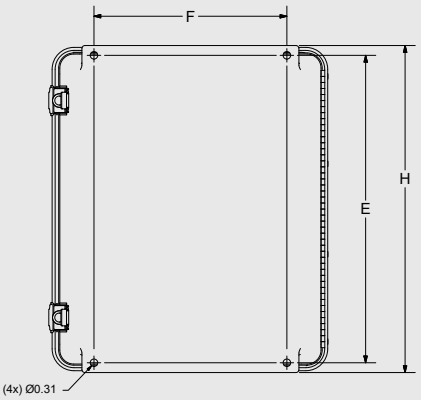


NOTES:
1. CATALOG DRAWING IS FOR REFERENCE ONLY
2. SEE ACTUAL PART DRAWING FOR SPECIFIC DESIGN
3. NOTE "J" DIMENSION IS WITH 0.080" THICK BACK PANEL
4. BACK PANEL IS SOLD SEPARATELY









SCREW SIZES & TORQUE VALUES

PRODUCT SIZES	BACK PANEL SCREW SIZE	BACK PANEL RECOMMENDED TORQUE	COVER SCREW SIZE	COVER SCREW RECOMMENDED TORQUE	RECOMMENDED MOUNTING FLANGE TORQUE
J604 up to J2016	#10-32 x 3/8	16 - 20 in-lbs	#10-24 x 5/8	20 - 24 in-lbs	45 in-lbs max

JW Series – Flush Bonded Window

CATALOG NUMBER	OVERALL H X W X D	INSIDE A X B X C	WINDOW AREA (MAX) P X Q	MOUNTING E X F	J	K	L	M	N	HOLE DIA.	SHIP WEIGHT	PANEL NUMBER
JW604HPL JW604HLL	7.47 x 5.45 x 4.70 (190 x 138 x 119)	5.84 x 3.85 x 4.34 (148 x 98 x 110)	4.25 x 2.25 (108 x 57)	6.75 x 2.00 (171 x 51)	3.97 (101)	4.25 (108)	2.25 (57)	0.25 (6)	7.39 (188)	0.31 (8)	2.40 lbs.	BP64**
JW606HPL JW606HLL	7.50 x 7.53 x 4.82 (191 x 191 x 122)	5.72 x 5.72 x 4.34 (145 x 145 x 110)	4.25 x 4.25 (108 x 108)	6.75 x 4.00 (171 x 101)	3.97 (101)	4.25 (108)	4.25 (108)	0.25 (6)	7.53 (191)	0.31 (8)	2.80 lbs.	BP66**
JW806HPL JW806HLL	9.63 x 7.52 x 4.70 (245 x 191 x 119)	7.73 x 5.74 x 4.34 (196 x 146 x 110)	6.25 x 4.25 (159 x 108)	8.88 x 4.00 (225 x 101)	3.92 (100)	6.25 (159)	4.25 (108)	0.25 (6)	9.5 (242)	0.31 (8)	3.50 lbs.	BP86**
JW808HLL	9.56 x 9.38 x 4.87 (243 x 238 x 124)	7.73 x 7.73 x 4.52 (196 x 196 x 115)	6.25 x 6.25 (159 x 159)	8.75 x 6.00 (222 x 152)	3.98 (101)	6.25 (159)	6.25 (159)	0.25 (6)	9.38 (238)	0.31 (8)	3.80 lbs.	BP88**

All measures are in inches, items in parentheses are in millimeters.

*Crowned cover – center of cover raised 3/4"

**Panel sold separately

JW Series – Flush Bonded Window

CATALOG NUMBER	OVERALL H X W X D	INSIDE A X B X C	WINDOW AREA (MAX) P X Q	MOUNTING E X F	J	K	L	M	N	HOLE DIA.	SHIP WEIGHT	PANEL NUMBER
JW1008HPL JW1008HLL	11.63 x 9.41 x 4.22 (295 x 239 x 107)	9.73 x 7.73 x 3.85 (247 x 196 x 98)	8.25 x 6.25 (210 x 159)	10.75 x 6.00 (273 x 152)	3.44 (87)	8.25 (210)	6.25 (159)	0.25 (6)	11.35 (288)	0.31 (8)	4.60 lbs.	BP108**
JW1008HAPL* Crowned Cover	11.63 x 9.37 x 5.05 (295 x 238 x 129)	9.73 x 7.73 x 4.70 (247 x 196 x 119)	8.25 x 6.25 (210 x 159)	10.75 x 6.00 (273 x 152)	4.25 (108)	8.25 (210)	6.25 (159)	0.25 (6)	11.38 (289)	0.31 (8)	4.70 lbs.	BP108**
JW100806HPL JW100806HLL	11.97 x 9.42 x 6.61 (304 x 239 x 165)	9.74 x 7.74 x 6.25 (248 x 197 x 159)	8.25 x 6.25 (210 x 159)	10.94 - 10.75 x 6.00 (278 - 273 x 152)	5.67 (141)	8.25 (210)	6.25 (159)	0.25 (6)	11.42 (290)	0.31 (8)	5.20 lbs.	BP108**
JW1210HPL JW1210HLL	13.56 x 11.43 x 5.22 (344 x 291 x 133)	11.79 x 9.80 x 4.85 (299 x 249 x 123)	10.25 x 8.25 (260 x 210)	12.75 x 8.00 (324 x 203)	4.50 (114)	10.25 (260)	8.25 (210)	0.25 (6)	13.41 (341)	0.31 (8)	6.60 lbs.	BP1210**
JW1212HPL JW1212HLL	13.56 x 13.38 x 6.34 (344 x 340 x 161)	11.70 x 11.70 x 5.99 (297 x 297 x 152)	10.25 x 10.25 (260 x 260)	12.75 x 10.00 (324 x 254)	5.51 (140)	10.25 (260)	10.25 (260)	0.25 (6)	13.38 (340)	0.31 (8)	8.40 lbs.	BP1212**
JW1407HPL	15.87 x 8.75 x 6.81 (403 x 222 x 173)	14.00 x 7.00 x 6.5 (356 x 178 x 165)	12.75 x 5.75 (324 x 146)	15.00 x 5.00 (381 x 127)	6.11 (155)	12.25 (311)	5.25 (133)	0.25 (6)	15.75 (400)	0.31 (8)	6.10 lbs.	BP1407**
JW1412HPL JW1412HLL	15.50 x 13.48 x 6.20 (394 x 342 x 158)	13.50 x 11.52 x 5.88 (343 x 293 x 149)	12.25 x 10.25 (311 x 260)	14.63 x 10.00 (372 x 254)	5.36 (137)	12.25 (311)	10.25 (260)	0.25 (6)	15.48 (393)	0.31 (8)	9.90 lbs.	BP1412**
JW1614HPL JW1614HLL	17.53 x 15.46 x 6.21 (445 x 393 x 157)	15.60 x 13.56 x 5.88 (396 x 344 x 149)	14.25 x 12.25 (362 x 311)	16.75 x 12.00 (425 x 305)	5.35 (136)	14.25 (362)	12.25 (311)	0.25 (6)	17.46 (444)	0.31 (8)	12.20 lbs.	BP1614**
JW1816HPL JW1816HLL	19.63 x 17.63 x 8.81 (499 x 447 x 224)	17.69 x 15.69 x 8.38 (449 x 399 x 213)	16.25 x 14.25 (413 x 362)	18.88 x 12.00 (479 x 305)	7.98 (203)	16.25 (413)	14.25 (362)	0.25 (6)	19.61 (498)	0.31 (8)	20.00 lbs.	BP1816**
JW2016HPL JW2016HLL	22.00 x 17.68 x 8.81 (559 x 449 x 224)	19.72 x 15.72 8.47 (501 x 399 x 215)	18.25 x 14.25 (464 x 362)	21.25 x 10.00 (540 x 254)	7.98 (203)	18.25 (464)	14.25 (362)	0.25 (6)	21.68 (551)	0.31 (8)	22.50 lbs.	BPJ2016**

All measures are in inches, items in parentheses are in millimeters.

*Crowned cover – center of cover raised 3/4"

**Panel sold separately

RJ & RJW Series

RJ & RJW Series

The **RJ Series** offers a "raised cover" that increases depth by adding to the depth of the cover. This feature can be particularly effective with cover mounted components. Available in opaque (RJ) or window (RJW).

The **RJ Series** enclosures follow the original design of fiberglass enclosure products featuring a modest overhang raised cover on a flange mounted base. This simple but elegant concept offers unobstructed side-walls, built in mounting capabilities and the strength characteristics associated with a protective wrap around raised cover that is hinged, latched or screwed down. Stahlin's **RJ Series** enclosures are designed for general electrical and electronic applications and any application that has associated environmental concerns. Simple in its design, the enclosure can be configured with cutouts and modifications that make your finished product truly unique. They accommodate standard back panel mounting but offer a range of panels, including an elevated dead front panel.

Product Configurations

RJ SERIES

- **HPL** — HINGED, PADLOCK LATCH
- **HW** — HINGED, 2 COVER SCREWS
- **W** — 4 COVER SCREWS, LIFT OFF COVER
- **HLL** — HINGED, TWIST LATCH

RJW SERIES

- **HPL** — HINGED, PADLOCK LATCH
- **HLL** — HINGED, TWIST LATCH

Attributes

- Available in 2 cover options on certain size enclosures:
  1. Opaque cover (RJ)
  2. Flush bonded window (RJW)
- Overhang cover on smooth sided base
- High temperature, flame retardant, non-corrosive
- All stainless hardware latches and screws
- Full length stainless steel hinge
- Chemically resistant fiberglass reinforced polyester
- Non-corrosion, environmental designs
- Stainless steel retention chain on screw covers
- Continuous polyurethane gasket

Industry Standards

NEMA 250, UL Listed UL50, UL50e, UL508A	File E64358 Type 1, 3R, 4X, 6P, 12
CSA Std C22.2	File LR069014 Type 1, 3R, 4X, 6P, 12
IEC 60529	File E362920 IP66
UL1741	File E333478 W, HW, HPL, FHW
Plenum Space (UL2043) Compliant	Yes
Temperature Range	(-76°F to +274°F) (-60°C to +134°C)
Temperature Range Window	(-26°F to +170°F) (-32°C to +76°C)
Temperature Range Clear Cover	(-30°F to +248°F) (-34°C to +120°C)
Flammability Rating	UL94-5V
Self Extinguishing	Non-haloginated, non-flame propagating
Chemical Resistance	Full chemical resistance charts listed in appendix
NFPA No. 101 Flame Spread	Class A (1)
Outdoor UV Exposure	(f1) Rated
Color	Available standard glacier grey (PMS 428C).

Raised Opaque Cover

HPL **CONFIGURATION**
Hinged, padlock latch

HPL Construction

Material	SolarGuard® – Hot compression molded fiberglass reinforced polyester (thermoset)
Gasket	Poured polyurethane seamless gasket provides watertight, dust-tight environmental seal
Stainless Steel Hardware	300 Series stainless used on all external hardware
Molded in Mounting Flange	Integral flange molded in place for ease of mounting
Mounting Bosses	Panel mounting capability for fixed rear panel
Metal Inserts	Back panel utilizes threaded brass inserts accepting 10-32 screws
Soft Edge Design	Rounded edges, minimal protrusions or exposed pocket areas for assembly of dust and debris
Raised Cover	Extended depth in cover
Color	Available standard glacier grey (PMS 428C)

HPL Modifications

Custom Colors	pg. 21-22
Silk Screening	pg. 21-22
EMI/RFI Shielding	pg. 21-22
Custom Window	pg. 21-22
Custom Cutouts/Holes	pg. 21-22

HPL Industry Standards

NEMA 250, UL Listed UL50, UL50e, UL508A	File E64358 Type 1, 3R, 4X, 6P, 12
CSA Std C22.2	File LR069014; Type 1, 3R, 4X, 6P, 12
IEC 60529	File E362920 IP66
UL1741	File E333478; W, HW, HPL, FHW
Plenum Space (UL2043) Compliant	Yes
Temperature Range	(-76°F to +274°F) (-60°C to +134°C)
Flammability Rating	UL94-5V
Self Extinguishing	Non-halogenated, Non-flame propagating
Chemical Resistance	Full chemical resistance charts listed in appendix
NFPA No. 101 Flame Spread	Class A (1)
Outdoor Exposure UL746C	(f1) Rated

HPL Accessories

PANELS	**Aluminum**	BP_AL	pg. 174-175
	Fiberglass	BP_FG	pg. 174-175
	Stainless Steel	BP_SS	pg. 174-175
	Carbon Steel	BP_CS	pg. 174-175
	Dead Front Panels		pg. 180-181
ACCESSORIES	**Drain & Breather Vents**		pg. 185
	Hole Plugs		pg. 187
	Assorted Hubs and Cord Grips		pg. 188-189
	All Other Accessories		pg. 184-194

Raised Opaque Cover

CONFIGURATION
Hinged, 2 cover screws HW

HW Construction

Material	SolarGuard® – Hot compression molded fiberglass reinforced polyester (thermoset)
Gasket	Poured polyurethane seamless gasket provides watertight, dust-tight environmental seal
Pan Head Screws	Minimizes protruding surfaces
Stainless Steel Hardware	300 Series stainless used on all external hardware
Molded in Mounting Flange	Integral flange molded in place for ease of mounting
Mounting Bosses	Panel mounting capability for fixed rear panel
Metal Inserts	Back panel utilizes threaded brass inserts accepting 10-32 screws. Cover accepting 10-24 screws.
Soft Edge Design	Rounded edges, minimal protrusions or exposed pocket areas for assembly of dust and debris
Raised Cover	Extended depth in cover
Color	Available standard glacier grey (PMS 428C)

HW Modifications

Custom Colors	pg. 21-22
Silk Screening	pg. 21-22
EMI/RFI Shielding	pg. 21-22
Custom Window	pg. 21-22
Custom Cutouts/Holes	pg. 21-22

HW Industry Standards

NEMA 250, UL Listed UL50, UL50e, UL508A	File E64358 Type 1, 3R, 4X, 6P, 12
CSA Std C22.2	File LR069014; Type 1, 3R, 4X, 6P, 12
IEC 60529	File E362920 IP66
UL1741	File E333478; W, HW, HPL, FHW
Plenum Space (UL2043) Compliant	Yes
Temperature Range	(-76°F to +274°F) (-60°C to +134°C)
Flammability Rating	UL94-5V
Self Extinguishing	Non-halogenated, Non-flame propagating
Chemical Resistance	Full chemical resistance charts listed in appendix
NFPA No. 101 Flame Spread	Class A (1)
Outdoor Exposure UL746C	(f1) Rated

HW Accessories

PANELS	**Aluminum**	BP_AL	pg. 174-175
	Fiberglass	BP_FG	pg. 174-175
	Stainless Steel	BP_SS	pg. 174-175
	Carbon Steel	BP_CS	pg. 174-175
	Dead Front Panels		pg. 180-181
ACCESSORIES	**Drain & Breather Vents**		pg. 185
	Hole Plugs		pg. 187
	Assorted Hubs and Cord Grips		pg. 188-189
	All Other Accessories		pg. 184-194

Raised Opaque Cover

W **CONFIGURATION**
4 cover screws, lift off cover

W Construction

Material	SolarGuard® – Hot compression molded fiberglass reinforced polyester (thermoset)
Gasket	Poured polyurethane seamless gasket provides watertight, dust-tight environmental seal
Pan Head Screws	Minimizes protruding surfaces
Stainless Steel Hardware	300 Series stainless used on all external hardware
Molded in Mounting Flange	Integral flange molded in place for ease of mounting
Mounting Bosses	Panel mounting capability for fixed rear panel
Metal Inserts	Back panel utilizes threaded brass inserts accepting 10-32 screws. Cover accepting 10-24 screws.
Soft Edge Design	Rounded edges, minimal protrusions or exposed pocket areas for assembly of dust and debris
Cover Retention Chain	Stainless steel beaded chain for securing cover after lift off
Raised Cover	Extended depth in cover
Color	Available standard glacier grey (PMS 428C)

W Modifications

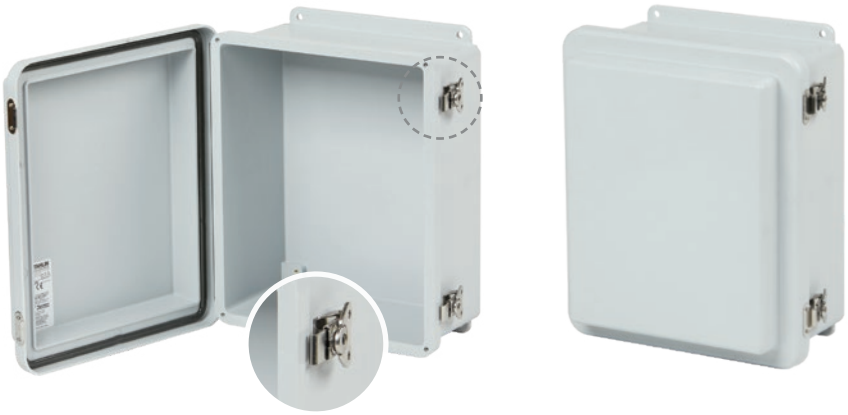
Custom Colors	pg. 21-22
Silk Screening	pg. 21-22
EMI/RFI Shielding	pg. 21-22
Custom Window	pg. 21-22
Custom Cutouts/Holes	pg. 21-22

W Industry Standards

NEMA 250, UL Listed UL50, UL50e, UL508A	File E64358 Type 1, 3R, 4X, 6P, 12
CSA Std C22.2	File LR069014; Type 1, 3R, 4X, 6P, 12
IEC 60529	File E362920 IP66
UL1741	File E333478; W, HW, HPL, FHW
Plenum Space (UL2043) Compliant	Yes
Temperature Range	(-76°F to +274°F) (-60°C to +134°C)
Flammability Rating	UL94-5V
Self Extinguishing	Non-halogenated, Non-flame propagating
Chemical Resistance	Full chemical resistance charts listed in appendix
NFPA No. 101 Flame Spread	Class A (1)
Outdoor Exposure UL746C	(f1) Rated

W Accessories

PANELS	**Aluminum**	BP_AL	pg. 174-175
	Fiberglass	BP_FG	pg. 174-175
	Stainless Steel	BP_SS	pg. 174-175
	Carbon Steel	BP_CS	pg. 174-175
	Dead Front Panels		pg. 180-181
ACCESSORIES	**Drain & Breather Vents**		pg. 185
	Hole Plugs		pg. 187
	Assorted Hubs and Cord Grips		pg. 188-189
	All Other Accessories		pg. 184-194



Raised Opaque Cover

CONFIGURATION
Hinged, twist latch HLL

HLL Construction

Material	SolarGuard® – Hot compression molded fiberglass reinforced polyester (thermoset)
Gasket	Poured polyurethane seamless gasket provides watertight, dust-tight environmental seal
Stainless Steel Hardware	300 Series stainless used on all external hardware
Molded in Mounting Flange	Integral flange molded in place for ease of mounting
Mounting Bosses	Panel mounting capability for fixed rear panel
Metal Inserts	Back panel utilizes threaded brass inserts accepting 10-32 screws
Soft Edge Design	Rounded edges, minimal protrusions or exposed pocket areas for assembly of dust and debris
Raised Cover	Extended depth in cover
Color	Available standard glacier grey (PMS 428C)

HLL Modifications

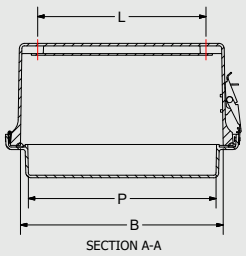
Custom Colors	pg. 21-22
Silk Screening	pg. 21-22
EMI/RFI Shielding	pg. 21-22
Custom Window	pg. 21-22
Custom Cutouts/Holes	pg. 21-22

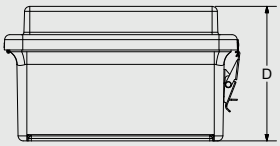
HLL Industry Standards

NEMA 250, UL Listed UL50, UL50e, UL508A	File E64358 Type 1, 3R, 4X, 6P, 12
CSA Std C22.2	File LR069014; Type 1, 3R, 4X, 6P, 12
IEC 60529	File E362920 IP66
UL1741	File E333478; W, HW, HPL, FHW
Plenum Space (UL2043) Compliant	Yes
Temperature Range	(-76°F to +274°F) (-60°C to +134°C)
Flammability Rating	UL94-5V
Self Extinguishing	Non-halogenated, Non-flame propagating
Chemical Resistance	Full chemical resistance charts listed in appendix
NFPA No. 101 Flame Spread	Class A (1)
Outdoor Exposure UL746C	(f1) Rated

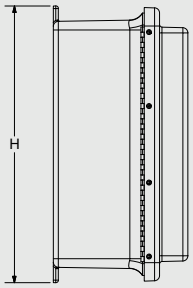
HLL Accessories

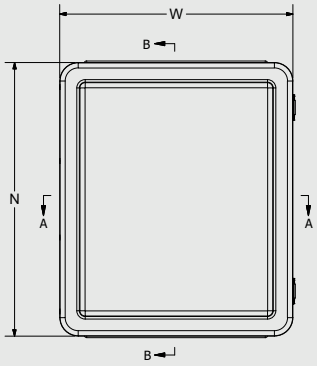
PANELS	**Aluminum**	BP_AL	pg. 174-175
	Fiberglass	BP_FG	pg. 174-175
	Stainless Steel	BP_SS	pg. 174-175
	Carbon Steel	BP_CS	pg. 174-175
	Dead Front Panels		pg. 180-181
ACCESSORIES	**Drain & Breather Vents**		pg. 185
	Hole Plugs		pg. 187
	Assorted Hubs and Cord Grips		pg. 188-189
	All Other Accessories		pg. 184-194

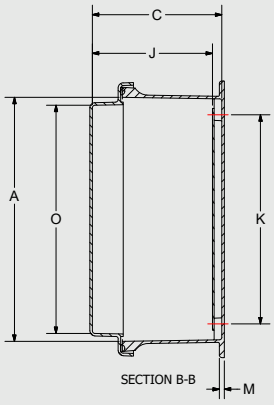


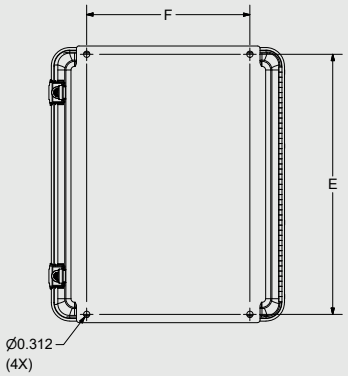


NOTES:
1. CATALOG DRAWING IS FOR REFERENCE ONLY
2. SEE ACTUAL PART DRAWING FOR SPECIFIC DESIGN
3. "J" DIMENSION IS WITH 0.080" THICK BACK PANEL INSTALLED
4. BACK PANEL IS SOLD SEPARATELY









SCREW SIZES & TORQUE VALUES

PRODUCT SIZES	BACK PANEL SCREW SIZE	BACK PANEL RECOMMENDED TORQUE	COVER SCREW SIZE	COVER SCREW RECOMMENDED TORQUE	RECOMMENDED MOUNTING FLANGE TORQUE
RJ604 up to RJ2016	#10-32 x 3/8	16 - 20 in-lbs	#10-24 x 5/8	20 - 24 in-lbs	45 in-lbs max

RJ Series – Raised Opaque Cover

CATALOG NUMBER	OVERALL H X W X D	INSIDE A X B X C	MOUNTING E X F	J	K	L	M	N	O	P	HOLE DIA.	SHIP WEIGHT	PANEL NUMBER
RJ604HPL RJ604HW RJ604W RJ604HLL	7.47 x 5.47 x 6.21 (190 x 139 x 158)	5.84 x 3.85 x 5.95 (148 x 98 x 151)	6.75 x 2.00 (171 x 51)	5.51 (140)	4.25 (108)	2.25 (57)	0.25 (6)	7.45 (189)	5.31 (135)	3.34 (85)	0.31 (8)	2.60 lbs.	BP64*
RJ606HPL RJ606HW RJ606W RJ606HLL	7.50 x 7.53 x 6.32 (191 x 191 x 161)	5.72 x 5.72 x 5.97 (145 x 145 x 152)	6.75 x 4.00 (171 x 101)	5.49 (139)	4.25 (108)	4.25 (108)	0.25 (6)	7.53 (191)	5.34 (136)	5.31 (135)	0.31 (8)	3.10 lbs.	BP66*
RJ806HPL RJ806HW RJ806W RJ806HLL	9.63 x 7.52 x 6.20 (245 x 191 x 158)	7.73 x 5.74 x 5.95 (196 x 146 x 151)	8.88 x 4.00 (225 x 101)	5.49 (139)	6.25 (159)	4.25 (108)	0.25 (6)	9.36 (238)	7.25 (185)	5.28 (134)	0.31 (8)	3.70 lbs.	BP86*
RJ808HPL	9.56 x 9.38 x 6.25 (243 x 238 x 159)	7.73 x 7.73 x 6.00 (196 x 196 x 152)	8.75 x 6.00 (222 x 152)	5.42 (138)	6.25 (159)	6.25 (159)	0.25 (6)	9.38 (238)	7.17 (182)	7.17 (182)	0.31 (8)	4.20 lbs.	BP88*

All measures are in inches, items in parentheses are in millimeters.

**Panel sold separately*

RJ Series – Raised Opaque Cover

CATALOG NUMBER	OVERALL H X W X D	INSIDE A X B X C	MOUNTING E X F	J	K	L	M	N	O	P	HOLE DIA.	SHIP WEIGHT	PANEL NUMBER
RJ1008HPL RJ1008HW RJ1008W RJ1008HLL	11.63 x 9.37 x 6.58 (295 x 238 x 167)	9.73 x 7.73 x 6.33 (247 x 196 x 161)	10.75 x 6.00 (273 x 152)	5.87 (149)	8.25 (209)	6.25 (159)	0.25 (6)	11.38 (289)	9.3 (236)	7.38 (188)	0.31 (8)	5.20 lbs.	BP108*
RJ1210HPL RJ1210HW RJ1210W RJ1210HLL	13.56 x 11.43 x 6.58 (344 x 291 x 167)	11.79 x 9.80 x 6.32 (299 x 249 x 161)	12.75 x 8.00 (324 x 203)	5.87 (149)	10.25 (260)	8.25 (210)	0.25 (6)	13.41 (341)	11.2 (284)	9.23 (234)	0.31 (8)	6.70 lbs.	BP1210*
RJ1212HPL RJ1212HLL	13.56 x 13.38 x 7.72 (344 x 340 x 196)	11.70 x 11.70 x 7.47 (297 x 297 x 190)	12.75 x 10.00 (324 x 254)	6.89 (175)	10.25 (260)	10.25 (260)	0.25 (6)	13.38 (340)	11.17 (284)	11.17 (284)	0.31 (8)	8.90 lbs.	BP1212*
RJ1412HPL RJ1412HW RJ1412W RJ1412HLL	15.50 x 13.38 x 7.69 (394 x 340 x 195)	13.52 x 11.52 x 7.45 (343 x 293 x 189)	14.63 x 10.00 (372 x 254)	6.86 (174)	12.25 (311)	10.25 (260)	0.25 (6)	15.42 (392)	13.2 (335)	11.16 (284)	0.31 (8)	10.20 lbs.	BP1412*
RJ1614HPL RJ1614HW RJ1614W RJ1614HLL	17.53 x 15.43 x 7.68 (445 x 392 x 195)	15.60 x 13.56 x 7.45 (396 x 344 x 189)	16.75 x 12.00 (425 x 305)	6.85 (174)	14.25 (362)	12.25 (311)	0.25 (6)	17.43 (443)	15.2 (386)	13.24 (336)	0.31 (8)	12.30 lbs.	BP1614*
RJ1816HPL RJ1816HW RJ1816HLL	19.63 x 17.63 x 10.63 (499 x 444 x 270)	17.69 x 15.69 x 10.31 (449 x 399 x 262)	18.88 x 12.00 (479 x 305)	9.86 (250)	16.25 (413)	14.25 (362)	0.25 (6)	19.49 (495)	17.25 (438)	15.25 (387)	0.31 (8)	19.50 lbs.	BP1816*
RJ2016HPL RJ2016HW RJ2016HLL	22.00 x 17.56 x 10.63 (559 x 446 x 270)	19.72 x 15.72 x 10.33 (501 x 399 x 262)	21.25 x 10.00 (540 x 254)	9.86 (250)	18.25 (464)	14.25 (362)	0.25 (6)	21.56 (548)	19.31 (490)	15.39 (391)	0.31 (8)	21.40 lbs.	BPJ2016*

All measures are in inches, items in parentheses are in millimeters.

*Panel sold separately

Flush Bonded Window

HPL **CONFIGURATION**
Hinged, padlock latch

HPL Construction

Material	SolarGuard® – Hot compression molded fiberglass reinforced polyester (thermoset)
Gasket	Poured polyurethane seamless gasket provides watertight, dust-tight environmental seal
Stainless Steel Hardware	300 Series stainless used on all external hardware
Molded in Mounting Flange	Integral flange molded in place for ease of mounting
Mounting Bosses	Panel mounting capability for fixed rear panel
Metal Inserts	Back panel utilizes threaded brass inserts accepting 10-32 screws
Bonded Window	Precision routed flush bonded Super Abrasion Resistant acrylic material for maximum visibility
Raised Cover	Extended depth in cover
Color	Available standard glacier grey (PMS 428C)

HPL Modifications

Custom Colors	pg. 21-22
Silk Screening	pg. 21-22
EMI/RFI Shielding	pg. 21-22
Custom Window	pg. 21-22
Custom Cutouts/Holes	pg. 21-22

HPL Industry Standards

NEMA 250, UL Listed UL50, UL50e, UL508A	File E64358; Type 1, 3R, 4X, 6P, 12
CSA Std C22.2	File LR069014; Type 1, 3R, 4X, 6P, 12
IEC 60529	File E362920 IP66
UL1741	File E333478; W, HW, HPL, FHW
Plenum Space (UL2043) Compliant	Yes
Temperature Range	(-76°F to +274°F) (-60°C to +134°C)
Window Temperature Range	(-26°F to +170°F) (-32°C to +76°C)
Flammability Rating	UL94-5V
Self Extinguishing	Non-halogenated, Non-flame propagating
Chemical Resistance	Full chemical resistance charts listed in appendix
NFPA No. 101 Flame Spread	Class A (1)
Outdoor Exposure UL746C	(f1) Rated

HPL Accessories

PANELS	**Aluminum**	BP_AL	pg. 174-175
	Fiberglass	BP_FG	pg. 174-175
	Stainless Steel	BP_SS	pg. 174-175
	Carbon Steel	BP_CS	pg. 174-175
	Dead Front Panels		pg. 180-181
ACCESSORIES	**Drain & Breather Vents**		pg. 185
	Hole Plugs		pg. 187
	Assorted Hubs and Cord Grips		pg. 188-189
	All Other Accessories		pg. 184-194

Flush Bonded Window

CONFIGURATION
Hinged, twist latch HLL

HLL Construction

Material	SolarGuard® – Hot compression molded fiberglass reinforced polyester (thermoset)
Gasket	Poured polyurethane seamless gasket provides watertight, dust-tight environmental seal
Stainless Steel Hardware	300 Series stainless used on all external hardware
Molded in Mounting Flange	Integral flange molded in place for ease of mounting
Mounting Bosses	Panel mounting capability for fixed rear panel
Metal Inserts	Back panel utilizes threaded brass inserts accepting 10-32 screws
Bonded Window	Precision routed flush bonded Super Abrasion Resistant acrylic material for maximum visibility
Raised Cover	Extended depth in cover
Color	Available standard glacier grey (PMS 428C)

HLL Modifications

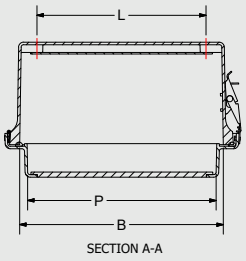
Custom Colors	pg. 21-22
Silk Screening	pg. 21-22
EMI/RFI Shielding	pg. 21-22
Custom Window	pg. 21-22
Custom Cutouts/Holes	pg. 21-22

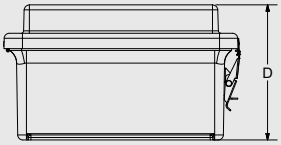
HLL Industry Standards

NEMA 250, UL Listed UL50, UL50e, UL508A	File E64358; Type 1, 3R, 4X, 6P, 12
CSA Std C22.2	File LR069014; Type 1, 3R, 4X, 6P, 12
IEC 60529	File E362920 IP66
UL1741	File E333478; W, HW, HPL, FHW
Plenum Space (UL2043) Compliant	Yes
Temperature Range	(-76°F to +274°F) (-60°C to +134°C)
Window Temperature Range	(-26°F to +170°F) (-32°C to +76°C)
Flammability Rating	UL94-5V
Self Extinguishing	Non-halogenated, Non-flame propagating
Chemical Resistance	Full chemical resistance charts listed in appendix
NFPA No. 101 Flame Spread	Class A (1)
Outdoor Exposure UL746C	(f1) Rated

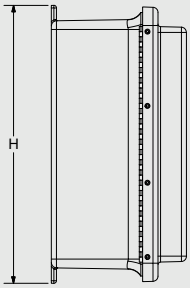
HLL Accessories

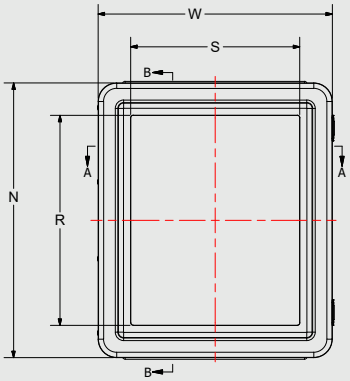
PANELS	**Aluminum**	BP_AL	pg. 174-175
	Fiberglass	BP_FG	pg. 174-175
	Stainless Steel	BP_SS	pg. 174-175
	Carbon Steel	BP_CS	pg. 174-175
	Dead Front Panels		pg. 180-181
ACCESSORIES	**Drain & Breather Vents**		pg. 185
	Hole Plugs		pg. 187
	Assorted Hubs and Cord Grips		pg. 188-189
	All Other Accessories		pg. 184-194

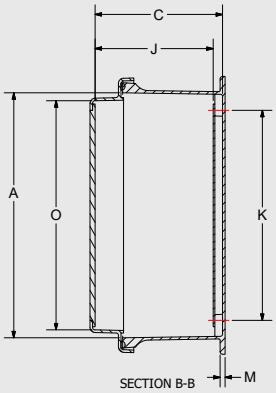


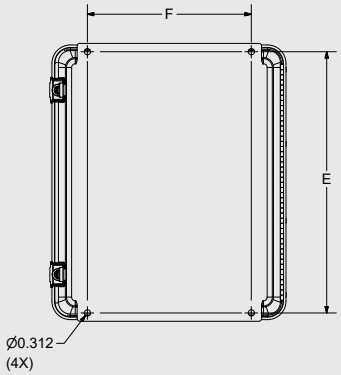


NOTES:
1. CATALOG DRAWING IS FOR REFERENCE ONLY
2. SEE ACTUAL PART DRAWING FOR SPECIFIC DESIGN
3. "J" DIMENSION IS WITH 0.080" THICK BACK PANEL INSTALLED
4. BACK PANEL SOLD SEPARATELY









SCREW SIZES & TORQUE VALUES

PRODUCT SIZES	BACK PANEL SCREW SIZE	BACK PANEL RECOMMENDED TORQUE	COVER SCREW SIZE	COVER SCREW RECOMMENDED TORQUE	RECOMMENDED MOUNTING FLANGE TORQUE
RJW604 up to RJW2016	#10-32 x 3/8	16 - 20 in-lbs	#10-24 x 5/8	20 - 24 in-lbs	45 in-lbs max

RJW Series – Flush Bonded Window

CATALOG NUMBER	OVERALL H X W X D	INSIDE A X B X C	WINDOW AREA (MAX) R X S	MOUNTING E X F	J	K	L	M	N	O	P	HOLE DIA.	SHIP WT.	PANEL NUMBER
RJW604HPL	7.47 x 5.47 x 6.21 (190 x 139 x 158)	5.84 x 3.85 x 5.81 (148 x 98 x 148)	4.25 x 2.25 (108 x 57)	6.75 x 2.00 (171 x 51)	5.51 (140)	4.25 (108)	2.25 (57)	0.25 (6)	7.45 (189)	5.31 (135)	3.34 (85)	0.31 (8)	2.60 lbs.	BP64*
RJW606HPL	7.50 x 7.53 x 6.32 (191 x 191 x 161)	5.72 x 5.72 x 5.97 (145 x 145 x 152)	4.25 x 4.25 (108 x 108)	6.75 x 4.00 (171 x 101)	5.49 (139)	4.25 (108)	4.25 (108)	0.25 (6)	7.53 (191)	5.34 (136)	5.31 (135)	0.31 (8)	3.10 lbs.	BP66*
RJW806HPL	9.63 x 7.52 x 6.20 (245 x 191 x 158)	7.73 x 5.74 x 5.97 (196 x 146 x 152)	6.25 x 4.25 (159 x 108)	8.88 x 4.00 (225 x 101)	5.49 (139)	6.25 (159)	4.25 (108)	0.25 (6)	9.36 (238)	7.25 (185)	5.28 (134)	0.31 (8)	3.70 lbs.	BP86*

All measures are in inches, items in parentheses are in millimeters.

**Panel sold separately*

RJW Series – Flush Bonded Window

CATALOG NUMBER	OVERALL H X W X D	INSIDE A X B X C	WINDOW AREA (MAX) R X S	MOUNTING E X F	J	K	L	M	N	O	P	HOLE DIA.	SHIP WT.	PANEL NUMBER
RJW1008HPL RJW1008HLL	11.63 x 9.37 x 6.58 (295 x 238 x 167)	9.73 x 7.73 x 6.25 (247 x 196 x 159)	8.25 x 6.25 (210 x 159)	10.75 x 6.00 (273 x 152)	5.87 (149)	8.25 (209)	6.25 (159)	0.25 (6)	11.38 (289)	9.3 (236)	7.38 (188)	0.31 (8)	5.20 lbs.	BP108*
RJW1210HPL RJW1210HLL	13.56 x 11.43 x 6.58 (344 x 291 x 167)	11.79 x 9.80 x 6.31 (299 x 249 x 160)	10.25 x 8.25 (260 x 210)	12.75 x 8.00 (324 x 203)	5.87 (149)	10.25 (260)	8.25 (210)	0.25 (6)	13.41 (341)	11.2 (284)	9.23 (234)	0.31 (8)	6.70 lbs.	BP1210*
RJW1412HPL RJW1412HLL	15.50 x 13.38 x 7.69 (394 x 340 x 195)	13.52 x 11.52 x 7.34 (343 x 293 x 186)	12.25 x 10.25 (311 x 260)	14.63 x 10.00 (372 x 254)	6.86 (174)	12.25 (311)	10.25 (260)	0.25 (6)	15.42 (392)	13.2 (335)	11.16 (284)	0.31 (8)	10.20 lbs.	BP1412*
RJW1614HPL RJW1614HLL	17.53 x 15.43 x 7.68 (445 x 392 x 195)	15.60 x 13.56 x 7.34 (396 x 344 x 186)	14.25 x 12.25 (362 x 311)	16.75 x 12.00 (425 x 305)	6.85 (174)	14.25 (362)	12.25 (311)	0.25 (6)	17.43 (443)	15.2 (386)	13.24 (336)	0.31 (8)	12.30 lbs.	BP1614*
RJW1816HPL RJW1816HLL	19.63 x 17.63 x 10.63 (499 x 444 x 270)	17.69 x 15.69 x 10.18 (449 x 399 x 259)	16.25 x 14.25 (413 x 362)	18.88 x 12.00 (479 x 305)	9.86 (250)	16.25 (413)	14.25 (362)	0.25 (6)	19.49 (495)	17.25 (438)	15.25 (387)	0.31 (8)	19.50 lbs.	BP1816*
RJW2016HPL	22.00 x 17.56 x 10.63 (559 x 446 x 270)	19.72 x 15.72 x 10.59 (501 x 399 x 269)	18.25 x 14.25 (464 x 362)	21.25 x 10.00 (540 x 254)	9.86 (250)	18.25 (464)	14.25 (362)	0.25 (6)	21.56 (548)	19.31 (490)	15.39 (391)	0.31 (8)	21.40 lbs.	BPJ2016*

All measures are in inches, items in parentheses are in millimeters.

*Panel sold separately

FatBoy Series

FatBoy Series

Industry's unique requirement for extra deep enclosure without significantly increasing the height and width of the enclosure is met with Stahlin's extra deep **Fatboy Series**.

The **Fatboy Series** is a clam shell style enclosure, noted by near equidistant capacity in both the cover and base. The series employs a flange mount base for ease of installation, a stainless steel full length hinge and stainless steel securing latch. Door clearance to the installed equipment must be considered when specifying this enclosure.

The demands for cover mounted components such as cover panels, din rails or multiple contact pushbuttons are met with ample depth from the cover or with substantial height for panel mounted components.

Attributes

- Available in 2 cover options:
  1. Opaque cover
  2. Flush bonded window
- Clam shell design, opening from the middle of the enclosure
- All stainless latches and hardware
- Memory retaining polyurethane gasket between cover and bases
- Full length stainless steel hinge
- Chemically resistant fiberglass reinforced polyester
- Integral mounting flange

Industry Standards

NEMA 250, UL Listed UL50, UL50e, UL508A	File E64358 Type 1, 3R, 4X, 12
CSA Std C22.2	File LR069014 Type 1, 3R, 4X, 12
IEC60529	File E362920 IP66
UL1741	File E333478
Temperature Range	(-76°F to +274°F) (-60°C to +134°C)
Temperature Range Window	(-26°F to +170°F) (-32°C to +76°C)
Flammability Rating	UL94-5V
Impact Rating	IK10
Self Extinguishing	Non-halogenated, non-flame propagating
Chemical Resistance	Full chemical resistance charts listed in appendix
NFPA No. 101 Flame Spread	Class A (1)
Outdoor UV Exposure	(f1) Rated
Color	Available standard glacier grey (PMS 428C).

Product Configurations

OPAQUE COVER

HINGED, PADLOCK LATCH

FLUSH BONDED WINDOW

HINGED, PADLOCK LATCH

Opaque Cover

SSH **CONFIGURATION**
Hinged, padlock latch

SSH Construction

Material	SolarGuard® – Hot compression molded fiberglass reinforced polyester (thermoset)
Gasket	Poured polyurethane seamless gasket provides watertight, dust-tight environmental seal
Pan Head Screws	Minimized protruding surfaces
Stainless Steel Hardware	300 Series stainless used on all external hardware
Molded in Mounting Flange	Molded in flange for ease of mounting
Mounting Bosses	Panel mounting capability for fixed rear panel
Metal Inserts	Back panel and cover panel utilizes threaded brass inserts accepting 10-32 screws.
Soft Edge Design	Rounded edges, minimal protrusions or exposed pocket areas for assembly of dust and debris
Color	Available standard glacier grey (PMS 428C)

SSH Modifications

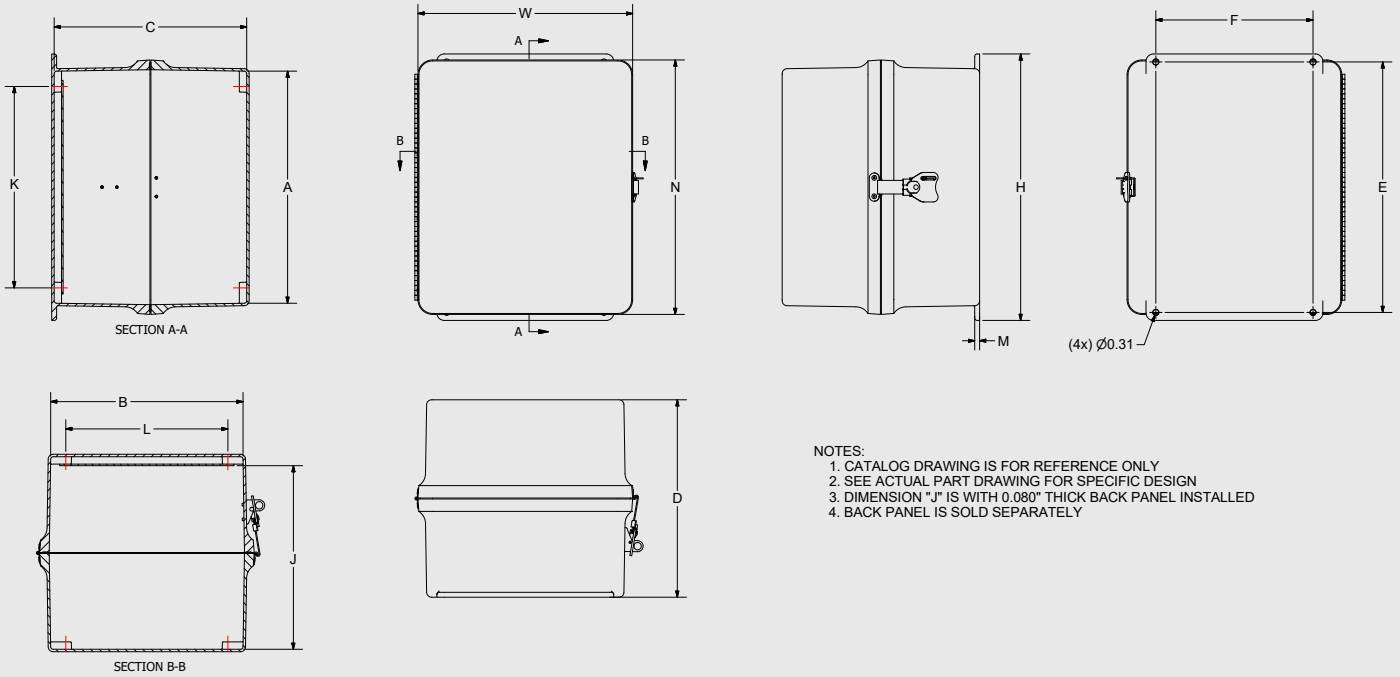
Custom Colors	pg. 21-22
Silk Screening	pg. 21-22
EMI/RFI Shielding	pg. 21-22
Custom Window	pg. 21-22
Custom Cutouts/Holes	pg. 21-22

SSH Industry Standards

NEMA 250, UL Listed **UL50, UL50e, UL508A**	File E64358 Type 1, 3R, 4X, 12
CSA Std C22.2	File LR069014 Type 1, 3R, 4X, 12
IEC60529	File E362920 IP66
UL1741	File E333478
Temperature Range	(-76°F to +274°F) (-60°C to +134°C)
Flammability Rating	UL94-5V
Self Extinguishing	Non-halogenated, non-flame propagating
Chemical Resistance	Full chemical resistance charts listed in appendix
NFPA No. 101 Flame Spread	Class A (1)
Outdoor Exposure UL746C	(f1) Rated

SSH Accessories

BACK PANELS	**Aluminum**	BP_AL	pg. 174-175
	Fiberglass	BP_FG	pg. 174-175
	Stainless Steel	BP_SS	pg. 174-175
	Carbon Steel	BP_CS	pg. 174-175
ACCESSORIES	**Drain & Breather Vents**		pg. 185
	Hole Plugs		pg. 187
	Assorted Hubs and Cord Grips		pg. 188-189
	All Other Accessories		pg. 184-194



NOTES:
1. CATALOG DRAWING IS FOR REFERENCE ONLY
2. SEE ACTUAL PART DRAWING FOR SPECIFIC DESIGN
3. DIMENSION "J" IS WITH 0.080" THICK BACK PANEL INSTALLED
4. BACK PANEL IS SOLD SEPARATELY

SCREW SIZES & TORQUE VALUES

PRODUCT SIZES	BACK PANEL SCREW SIZE	BACK PANEL RECOMMENDED TORQUE	RECOMMENDED MOUNTING FLANGE TORQUE
ALL SIZES	#10-32 x 3/8	16 - 20 in-lbs	45 in-lbs max

FatBoy Series – Opaque Cover

CATALOG NUMBER	OVERALL H x W x D	INSIDE A x B x C	MOUNTING E x F	J	K	L	M	N	HOLE DIA.	SHIP WEIGHT	PANEL NUMBER
J8068SSH	9.63 x 6.85 x 9.06 (245 x 174 x 230)	7.73 x 5.74 x 8.94 (196 x 146 x 227)	8.88 x 4.00 (225 x 101)	8.36 (212)	6.25 (159)	4.25 (108)	.25 (6)	8.87 (225)	.31 (8)	5.3 lbs.	BP86*
J8088SSH	9.56 x 8.84 x 9.44 (243 x 225 x 240)	7.73 x 7.73 x 9.19 (196 x 196 x 233)	8.75 x 6.00 (222 x 152)	8.61 (219)	6.25 (159)	6.25 (159)	.25 (6)	8.84 (224)	.31 (8)	5.8 lbs.	BP88*
J10088SSH	11.63 x 8.84 x 8.09 (295 x 225 x 206)	9.73 x 7.73 x 7.84 (247 x 196 x 199)	10.75 x 6.00 (273 x 152)	7.39 (188)	8.25 (210)	6.25 (159)	.25 (6)	10.86 (276)	.31 (8)	6.5 lbs.	BP108*
J121010SSH	13.56 x 10.93 x 10.06 (344 x 278 x 256)	11.79 x 9.80 x 9.81 (299 x 249 x 249)	12.75 x 8.00 (324 x 203)	9.36 (238)	10.25 (260)	8.25 (210)	.25 (6)	12.95 (329)	.31 (8)	9.1 lbs.	BP1210*
J121212SSH	13.56 x 12.84 x 12.38 (344 x 326 x 314)	11.70 x 11.70 x 12.13 (297 x 297 x 308)	12.75 x 10.00 (324 x 254)	11.55 (293)	10.25 (260)	10.25 (260)	.25 (6)	12.84 (326)	.31 (8)	12.1 lbs.	BP1212*
J141212SSH	15.50 x 12.83 x 12.06 (394 x 326 x 306)	13.50 x 11.52 x 11.81 (343 x 293 x 300)	14.63 x 10.00 (372 x 254)	11.23 (285)	12.25 (311)	10.25 (260)	.25 (6)	14.88 (378)	.31 (8)	14.1 lbs.	BP1412*
J161412SSH	17.53 x 14.94 x 12.07 (445 x 379 x 307)	15.60 x 13.56 x 11.82 (396 x 344 x 300)	16.75 x 12.00 (425 x 305)	11.24 (285)	14.25 (362)	12.25 (311)	.25 (6)	16.95 (431)	.31 (8)	17.6 lbs.	BP1614*
J181617SSH	19.63 x 16.92 x 17.19 (499 x 430 x 437)	17.69 x 15.69 x 16.81 (449 x 399 x 427)	18.88 x 12.00 (479 x 305)	16.38 (416)	16.25 (413)	14.25 (362)	.25 (6)	18.92 (481)	.31 (8)	26.4 lbs.	BP1816*
J201617SSH	22.00 x 17.00 x 17.21 (559 x 432 x 437)	19.72 x 15.72 x 16.84 (501 x 399 x 428)	21.25 x 10.00 (540 x 254)	16.38 (416)	18.25 (464)	14.25 (362)	.25 (6)	21.00 (533)	.31 (8)	28.5 lbs.	BPJ2016*

Caution: Metric units are for reference; do not convert.

*Panel sold separately

Flush Bonded Window

SSH **CONFIGURATION**
Hinged, padlock latch

SSH Construction

Material	SolarGuard® – Hot compression molded fiberglass reinforced polyester (thermoset)
Gasket	Poured polyurethane seamless gasket provides watertight, dust-tight environmental seal
Stainless Steel Hardware	300 Series stainless used on all external hardware
Molded in Mounting Flange	Molded in flange for ease of mounting
Mounting Bosses	Panel mounting capability for fixed rear panel
Metal Inserts	Back panel utilizes threaded brass inserts accepting 10-32 screws
Soft Edge Design	Rounded edges, minimal protrusions or exposed pocket areas for assembly of dust and debris
Bonded Window	Precision routed flush bonded Super Abrasion Resistant acrylic material for maximum visibility
Color	Available standard glacier grey (PMS 428C)

SSH Modifications

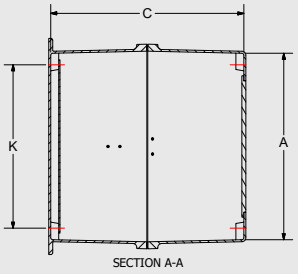
Custom Colors	pg. 21-22
Silk Screening	pg. 21-22
EMI/RFI Shielding	pg. 21-22
Custom Window	pg. 21-22
Custom Cutouts/Holes	pg. 21-22

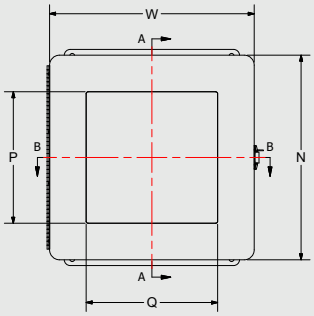
SSH Industry Standards

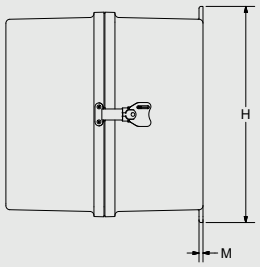
NEMA 250, UL Listed **UL50, UL50e, UL508A**	File E64358 Type 1, 3R, 4X, 12
CSA Std C22.2	File LR069014 Type 1, 3R, 4X, 12
IEC60529	File E362920 IP66
UL1741	File E333478
Temperature Range	(-76°F to +274°F) (-60°C to +134°C)
Temperature Range Window	(-26°F to +170°F) (-32°C to +76°C)
Flammability Rating	UL94-5V
Self Extinguishing	Non-halogenated, non-flame propagating
Chemical Resistance	Full chemical resistance charts listed in appendix
NFPA No. 101 Flame Spread	Class A (1)
Outdoor Exposure UL746C	(f1) Rated

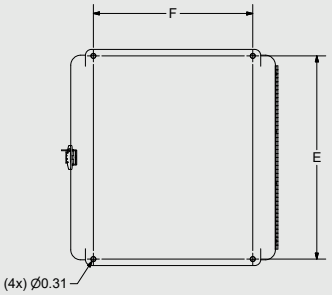
SSH Accessories

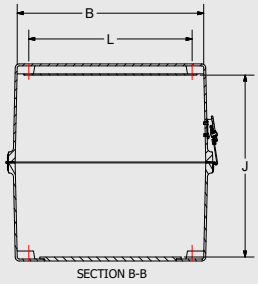
BACK PANELS	**Aluminum**	BP_AL	pg. 174-175
	Fiberglass	BP_FG	pg. 174-175
	Stainless Steel	BP_SS	pg. 174-175
	Carbon Steel	BP_CS	pg. 174-175
ACCESSORIES	**Drain & Breather Vents**		pg. 185
	Hole Plugs		pg. 187
	Assorted Hubs and Cord Grips		pg. 188-189
	All Other Accessories		pg. 184-194

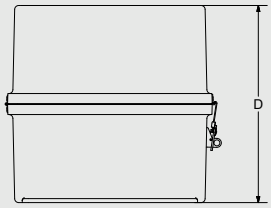












NOTES:
1. CATALOG DRAWING IS FOR REFERENCE ONLY
2. SEE ACTUAL PART DRAWING FOR SPECIFIC DESIGN
3. DIMENSION "J" IS WITH 0.080" THICK BACK PANEL INSTALLED
4. BACK PANEL IS SOLD SEPARATELY

SCREW SIZES & TORQUE VALUES

PRODUCT SIZES	BACK PANEL SCREW SIZE	BACK PANEL RECOMMENDED TORQUE	COVER SCREW SIZE	COVER SCREW RECOMMENDED TORQUE	RECOMMENDED MOUNTING FLANGE TORQUE
J604 up to J2016	#10-32 x 3/8	16 - 20 in-lbs	#10-24 x 5/8	20 - 24 in-lbs	45 in-lbs max
J2020 up to J2424	1/4-20 x 1/2	20 - 24 in-lbs	N/A	N/A	80 in-lbs max

FatBoy Series – Flush Bonded Window

CATALOG NUMBER	OVERALL H x W x D	INSIDE A x B x C	MOUNTING E x F	J	K	L	M	N	WINDOW AREA P X Q	HOLE DIA.	SHIP WEIGHT	PANEL NUMBER
JW121010SSH	13.56 x 10.93 x 10.06 (344 x 278 x 256)	11.79 x 9.80 x 9.81 (299 x 249 x 249)	12.75 x 8.00 (324 x 203)	9.36 (238)	10.25 (260)	8.25 (210)	.25 (6)	12.95 (329)	8.875 x 6.875 (225 x 175)	.31 (8)	9.1 lbs.	BP1210*
JW141212SSH	15.50 x 12.83 x 12.06 (394 x 326 x 306)	13.50 x 11.52 x 11.81 (343 x 293 x 300)	14.63 x 10.00 (372 x 254)	11.23 (285)	12.25 (311)	10.25 (260)	.25 (6)	14.88 (378)	10.875 x 8.875 (276 x 225)	.31 (8)	14.1 lbs.	BP1412*
JW161412SSH	17.53 x 14.94 x 12.07 (445 x 379 x 307)	15.60 x 13.56 x 11.82 (396 x 344 x 300)	16.75 x 12.00 (425 x 305)	11.24 (285)	14.25 (362)	12.25 (311)	.25 (6)	16.95 (431)	12.25 x 10.25 (311 x 260)	.31 (8)	17.6 lbs.	BP1614*
JW181617SSH	19.63 x 16.92 x 17.19 (499 x 430 x 437)	17.69 x 15.69 x 16.81 (449 x 399 x 427)	18.88 x 12.00 (479 x 305)	16.38 (416)	16.25 (413)	14.25 (362)	.25 (6)	18.92 (481)	14.875 x 12.875 (378 x 327)	.31 (8)	26.4 lbs.	BP1816*

Caution: Metric units are for reference; do not convert.

**Panel sold separately*

TeleControl Series

TeleControl Series

The **TeleContol Series** is designed to house telephones. The **TeleContol Series** enclosures follow the original design of fiberglass enclosure products featuring a modest overhang raised cover on a flange mounted base. This simple but elegant concept offers unobstructed side-walls, built in mounting capabilities and the strength characteristics associated with a protective wrap around raised cover that is hinged and latched down. The bonded window is precision routed flush and features Super Abrasion Resistant acrylic material. Simple in its design, the enclosure can be configured with cutouts and modifications that make your finished product truly unique. They accommodate standard back panel mounting to secure the phone.

Attributes

- Overhang cover on smooth sided base
- High temperature, flame retardant, non-corrosive
- Full length stainless hinge
- Chemically resistant fiberglass reinforced polyester
- Non-corrosive environmental designs
- Continuous polyurethane gasket

Industry Standards

NEMA 250, UL Listed UL50, UL50e, UL508A	File E64358 Type 1, 3R, 4X, 6P, 12
CSA Std C22.2	File LR069014 Type 1, 3R, 4X, 6P, 12
Temperature Range	(-76°F to +274°F) (-60°C to +134°C)
Window Temperature Range	(-26°F to +170°F) (-32°C to +76°C)
Flammability Rating	UL94-5V
Self Extinguishing	Non-halogenated, non-flame propagating
Chemical Resistance	Full chemical resistance charts listed in appendix
NFPA No. 101 Flame Spread	Class A (1)
Outdoor UV Exposure	(f1) Rated
Color	Available standard glacier grey (PMS 428C)

Product Configurations

TELECONTROL SERIES

TC

TELEPHONE ENCLOSURE

TeleControl Series

TC **CONFIGURATION**
Telephone enclosure

TC Construction

Material	SolarGuard® – Hot compression molded fiberglass reinforced polyester (thermoset)
Gasket	Poured polyurethane seamless gasket provides watertight, dust-tight environmental seal
Stainless Steel Hardware	300 Series stainless used on all external hardware
Molded in Mounting Flange	Molded in flange for ease of mounting.
Mounting Bosses	Panel mounting capability for fixed rear panel
Metal Inserts	Back panel utilizes threaded brass inserts accepting 10-32 screws
Bonded Window	Precision routed flush bonded Super Abrasion Resistant acrylic material for maximum visibility
Color	Available standard in glacier grey (PMS 428C)

TC Modifications

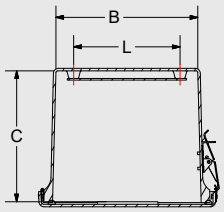
Custom Colors	pg. 21-22
Silk Screening	pg. 21-22
EMI/RFI Shielding	pg. 21-22
Custom Window	pg. 21-22
Custom Cutouts/Holes	pg. 21-22

TC Industry Standards

NEMA 250, UL Listed UL50, UL50e, UL508A	File E64358 Type 1, 3R, 4X, 6P, 12
CSA Std C22.2	File LR069014 Type 1, 3R, 4X, 6P, 12
Temperature Range	(-76°F to +274°F) (-60°C to +134°C)
Window Temperature Range	(-26°F to +170°F) (-32°C to +76°C)
Flammability Rating	UL94-5V
Self Extinguishing	Non-halogenated, non-flame propagating
Chemical Resistance	Full chemical resistance charts listed in appendix
NFPA No. 101 Flame Spread	Class A (1)
Outdoor UV Exposure	(f1) Rated

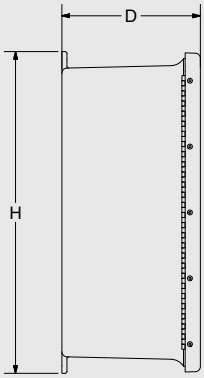
TC Accessories

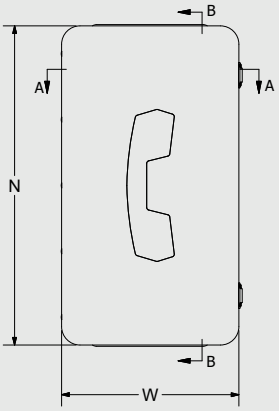
BACK PANELS	**Aluminum**	BP_AL	pg. 174-175
	Fiberglass	BP_FG	pg. 174-175
	Stainless Steel	BP_SS	pg. 174-175
	Carbon Steel	BP_CS	pg. 174-175
ACCESSORIES	**Drain & Breather Vents**		pg. 185
	Hole Plugs		pg. 187
	Assorted Hubs and Cord Grips		pg. 188-189
	All Other Accessories		pg. 184-194

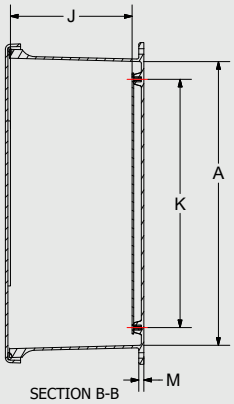


SECTION A-A

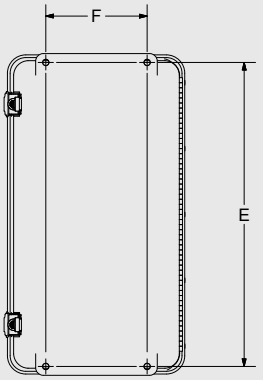
NOTES:
1. CATALOG DRAWING IS FOR REFERENCE ONLY
2. SEE ACTUAL PART DRAWING FOR SPECIFIC DESIGN
3. "J" DIMENSION IS WITH 0.080" THICK BACK PANEL INSTALLED
4. BACK PANEL IS SOLD SEPARATELY







SECTION B-B



SCREW SIZES & TORQUE VALUES

PRODUCT SIZES	BACK PANEL SCREW SIZE	BACK PANEL RECOMMENDED TORQUE	RECOMMENDED MOUNTING FLANGE TORQUE
J1407TC	#10-32 x 3/8	16 - 20 in-lbs	45 in-lbs max

TeleControl Series

CATALOG NUMBER	OVERALL H X W X D	INSIDE A X B X C	MOUNTING E X F	J	K	L	M	N	HOLE DIA.	SHIP WEIGHT	PANEL NUMBER
J1407TC	15.87 x 8.75 x 6.81 (403 x 222 x 173)	14.00 x 7.00 x 6.56 (356 x 178 x 167)	15 x 5 (381 x 127)	6.00 (152)	12.25 (311)	5.25 (133)	0.25 (6)	15.75 (400)	0.31 (8)	6.1 lbs.	BP1407*

Standard package does not include actual phone and installation of phone.
Other non-metallic enclosures available with phone window.

**Panel sold separately*

Diamond Shield® Series

Diamond Shield® Series

The **Diamond Shield® Series** was developed for design flexibility and pleasing aesthetics. Applications include high-end electronics, harsh corrosive environments, and industrial applications both indoors and out. Unique internal panel management capabilities provides the end user with only the features they need for their application, yet able to use every cubic inch of valuable internal enclosure space. The series offers an additional feature of panel mounting in the cover for use as an operator interface in industrial equipment control stations when required.

Attributes

- Available in 3 cover options:
  1. Opaque cover
  2. Flush bonded window
  3. Clear polycarbonate cover
- Maximum visibility to raised panels and control devices
- High temperature, flame retardant, non corrosive, environmental designs
- Stands up to an exceptionally broad range of chemical exposures
- Results in an environmentally sealed, environmentally sound space
- High impact resistance
- Double insulated material No incidental electrical contact
- Solid construction in a lightweight design
- UV Resistant

Product Configurations

OPAQUE COVER

HPL	HW	W	HLL
HINGED, 2 LOCKABLE PULL LATCHES	HINGED, 2 COVER SCREWS	4 COVER SCREWS, LIFT OFF COVER	HINGED, 2 LOCKABLE LINK LATCHES

FLUSH BONDED WINDOW

HPL	HLL
HINGED, 2 LOCKABLE PULL LATCHES	HINGED, 2 LOCKABLE LINK LATCHES

CLEAR WINDOW

HPL	HW	W	HLL
HINGED, 2 LOCKABLE PULL LATCHES	HINGED, 2 COVER SCREWS	4 COVER SCREWS, LIFT OFF COVER	HINGED, 2 LOCKABLE LINK LATCHES

Industry Standards

NEMA 250, UL Listed UL50, UL50e, UL508A	File E64358 Type 1, 3, 3S, 4X, 12, 13
CSA Std C22.2	File LR069014 Type 1, 3, 3S, 4X, 12, 13
IEC 60529	IP66
UL1741, W, HW, HL, HPL	File E333478
Temperature Range	(-76°F to +274°F) (-60°C to +134°C)
Temperature Range Window	(-26°F to +170°F) (-32°C to +76°C)
Temperature Range Clear Cover	(-40°F to +248°F) (-40°C to +120°C)
Flammability Rating	UL94-5V
Clear Cover Flammability	UL94-5V
Impact Rating	IK10
Self Extinguishing	Non-Halogenated, Non-flame propagating
Chemical Resistance	Full chemical resistance charts listed in appendix
NFPA No. 101 Flame Spread	Class A (1)
Outdoor UV Exposure	(f1) Rated

Opaque Cover

HPL **CONFIGURATION**
Hinged, 2 lockable pull latches

HPL Construction

Material	SolarGuard® – Hot compression molded fiberglass reinforced polyester (thermoset)
Gasket	Poured polyurethane seamless gasket provides watertight, dust-tight environmental seal
Stainless Steel Hardware	300 Series stainless used on all hardware
Mounting Bosses	Panel mounting capability for fixed rear panel
Metal inserts	All bosses utilize threaded brass inserts accepting 10-32 screws
Soft Edge Design	Rounded edges, minimal protrusions or exposed pocket areas for assembly of dust and debris
Color	Available standard glacier grey (PMS 428C)

HPL Modifications

Custom Colors	pg. 21-22
Silk Screening	pg. 21-22
EMI/RFI Shielding	pg. 21-22
Custom Window	pg. 21-22
Custom Cutouts/Holes	pg. 21-22

HPL Industry Standards

NEMA 250, UL Listed **UL50, UL50e, UL508A**	File E64358 Type 1, 3, 3S, 4X, 12, 13
CSA Std C22.2	File LR069014 Type 1, 3, 3S, 4X, 12, 13
IEC 60529	IP66
Temperature Range	(-76°F to +274°F) (-60°C to +134°C)
Flammability Rating	UL94-5V
Impact Rating	IK10
Self Extinguishing	Non-Halogenated, Non-flame propagating
Chemical Resistance	Full chemical resistance charts listed in appendix
NFPA No. 101 Flame Spread	Class A (1)
Outdoor Exposure UL746C	(f1) Rated

HPL Accessories

PANELS	**Aluminum**	BP_AL	pg. 174-175
	Fiberglass	BP_FG	pg. 174-175
	Stainless Steel	BP_SS	pg. 174-175
	Carbon Steel	BP_CS	pg. 174-175
	Dead Front Panels		pg. 180-181
	Mounting Feet		pg. 192
ACCESSORIES	**Drain & Breather Vents**		pg. 185
	Hole Plugs		pg. 187
	Assorted Hubs and Cord Grips		pg. 188-189
	All Other Accessories		pg. 184-194

Opaque Cover

CONFIGURATION
Hinged, 2 cover screws HW

HW Construction

Material	SolarGuard® – Hot compression molded fiberglass reinforced polyester (thermoset)
Gasket	Poured polyurethane seamless gasket provides watertight, dust-tight environmental seal
Recessed Screws	No protruding surfaces
Stainless Steel Hardware	300 Series stainless used on all hardware
Mounting Bosses	Panel mounting capability for fixed rear panel
Metal inserts	All bosses utilize threaded brass inserts accepting 10-32 screws Cover screws 10-24
Soft Edge Design	Rounded edges, minimal protrusions or exposed pocket areas for assembly of dust and debris
Color	Available standard glacier grey (PMS 428C)

HW Modifications

Custom Colors	pg. 21-22
Silk Screening	pg. 21-22
EMI/RFI Shielding	pg. 21-22
Custom Window	pg. 21-22
Custom Cutouts/Holes	pg. 21-22

HW Industry Standards

NEMA 250, UL Listed UL50, UL50e, UL508A	File E64358 Type 1, 3, 3S, 4X, 12, 13
CSA Std C22.2	File LR069014 Type 1, 3, 3S, 4X, 12, 13
IEC 60529	IP66
Temperature Range	(-76°F to +274°F) (-60°C to +134°C)
Flammability Rating	UL94-5V
Impact Rating	IK10
Self Extinguishing	Non-Halogenated, Non-flame propagating
Chemical Resistance	Full chemical resistance charts listed in appendix
NFPA No. 101 Flame Spread	Class A (1)
Outdoor Exposure UL746C	(f1) Rated

HW Accessories

PANELS	**Aluminum**	BP_AL	pg. 174-175
	Fiberglass	BP_FG	pg. 174-175
	Stainless Steel	BP_SS	pg. 174-175
	Carbon Steel	BP_CS	pg. 174-175
	Dead Front Panels		pg. 180-181
	Mounting Feet		pg. 192
ACCESSORIES	**Drain & Breather Vents**		pg. 185
	Hole Plugs		pg. 187
	Assorted Hubs and Cord Grips		pg. 188-189
	All Other Accessories		pg. 184-194

Opaque Cover

W CONFIGURATION
4 cover screws, lift off cover

W Construction

Material	SolarGuard® – Hot compression molded fiberglass reinforced polyester (thermoset)
Gasket	Poured polyurethane seamless gasket provides watertight, dust-tight environmental seal
Recessed Screws	No protruding surfaces
Stainless Steel Hardware	300 Series stainless used on all hardware
Mounting Bosses	Panel mounting capability for fixed rear panel
Metal inserts	All bosses utilize threaded brass inserts accepting 10-32 screws; cover screws 10-24.
Soft Edge Design	Rounded edges, minimal protrusions or exposed pocket areas for assembly of dust and debris
Color	Available standard glacier grey (PMS 428C)

W Modifications

Custom Colors	pg. 21-22
Silk Screening	pg. 21-22
EMI/RFI Shielding	pg. 21-22
Custom Window	pg. 21-22
Custom Cutouts/Holes	pg. 21-22

W Industry Standards

NEMA 250, UL Listed **UL50, UL50e, UL508A**	File E64358 Type 1, 3, 3S, 4X, 12, 13
CSA Std C22.2	File LR069014 Type 1, 3, 3S, 4X, 12, 13
IEC 60529	IP66
Temperature Range	(-76°F to +274°F) (-60°C to +134°C)
Flammability Rating	UL94-5V
Impact Rating	IK10
Self Extinguishing	Non-Halogenated, Non-flame propagating
Chemical Resistance	Full chemical resistance charts listed in appendix
NFPA No. 101 Flame Spread	Class A (1)
Outdoor Exposure UL746C	(f1) Rated

W Accessories

PANELS	**Aluminum**	BP_AL	pg. 174-175
	Fiberglass	BP_FG	pg. 174-175
	Stainless Steel	BP_SS	pg. 174-175
	Carbon Steel	BP_CS	pg. 174-175
	Dead Front Panels		pg. 180-181
	Mounting Feet		pg. 192
ACCESSORIES	**Drain & Breather Vents**		pg. 185
	Hole Plugs		pg. 187
	Assorted Hubs and Cord Grips		pg. 188-189
	All Other Accessories		pg. 184-194

Opaque Cover

CONFIGURATION
Hinged, 2 lockable link latches HLL

HLL Construction

Material	SolarGuard® – Hot compression molded fiberglass reinforced polyester (thermoset)
Gasket	Poured polyurethane seamless gasket provides watertight, dust-tight environmental seal
Stainless Steel Hardware	300 Series stainless used on all hardware
Mounting Bosses	Panel mounting capability for fixed rear panel
Metal inserts	All bosses utilize threaded brass inserts accepting 10-32 screws
Soft Edge Design	Rounded edges, minimal protrusions or exposed pocket areas for assembly of dust and debris
Color	Available standard glacier grey (PMS 428C)

HLL Modifications

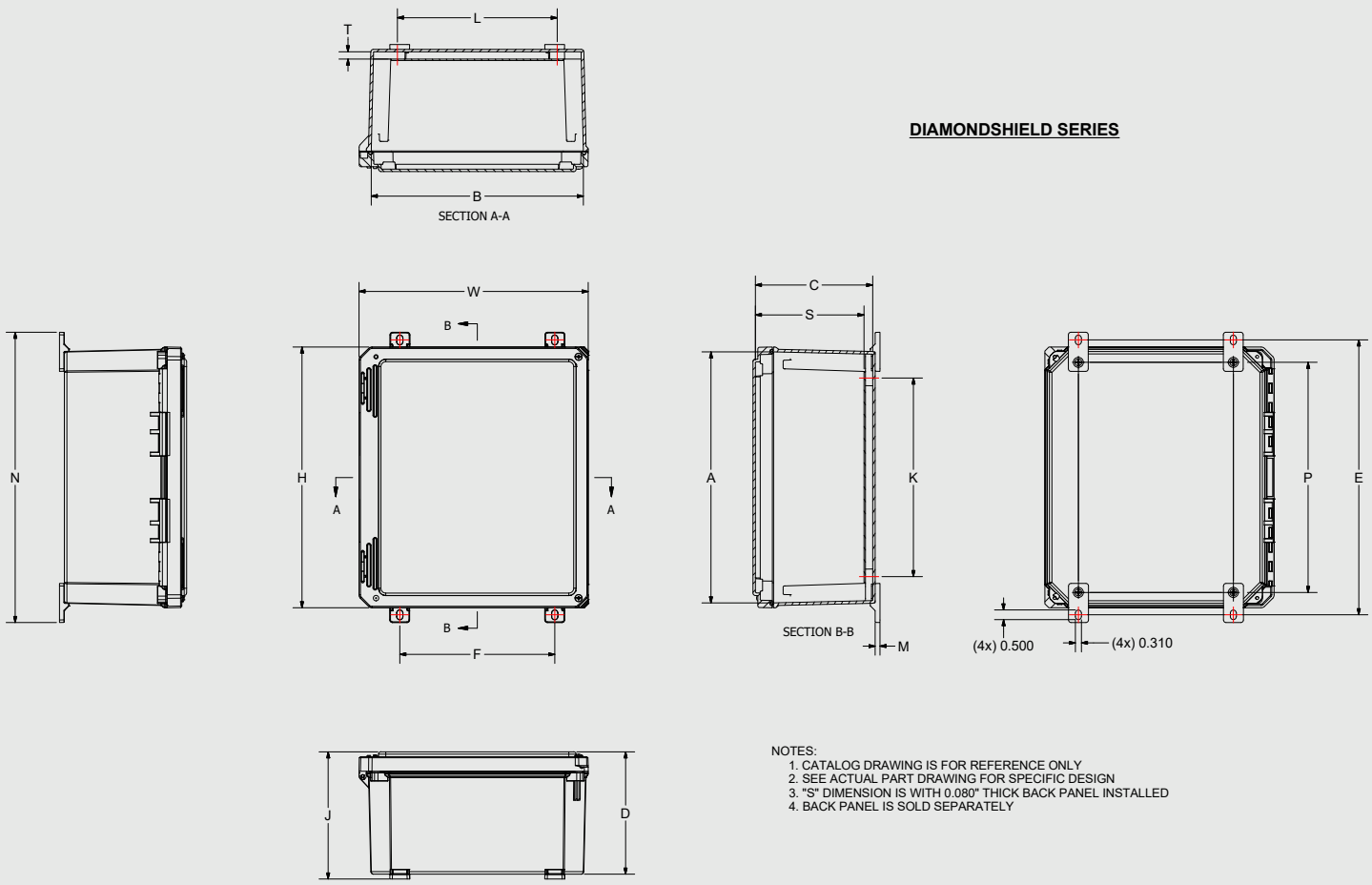
Custom Colors	pg. 21-22
Silk Screening	pg. 21-22
EMI/RFI Shielding	pg. 21-22
Custom Window	pg. 21-22
Custom Cutouts/Holes	pg. 21-22

HLL Industry Standards

NEMA 250, UL Listed **UL50, UL50e, UL508A**	File E64358 Type 1, 3, 3S, 4X, 12, 13
CSA Std C22.2	File LR069014 Type 1, 3, 3S, 4X, 12, 13
IEC 60529	IP66
Temperature Range	(-76°F to +274°F) (-60°C to +134°C)
Flammability Rating	UL94-5V
Impact Rating	IK10
Self Extinguishing	Non-Halogenated, Non-flame propagating
Chemical Resistance	Full chemical resistance charts listed in appendix
NFPA No. 101 Flame Spread	Class A (1)
Outdoor Exposure UL746C	(f1) Rated

HLL Accessories

PANELS	**Aluminum**	BP_AL	pg. 174-175
	Fiberglass	BP_FG	pg. 174-175
	Stainless Steel	BP_SS	pg. 174-175
	Carbon Steel	BP_CS	pg. 174-175
	Dead Front Panels		pg. 180-181
	Mounting Feet		pg. 192
ACCESSORIES	**Drain & Breather Vents**		pg. 185
	Hole Plugs		pg. 187
	Assorted Hubs and Cord Grips		pg. 188-189
	All Other Accessories		pg. 184-194



NOTES:
1. CATALOG DRAWING IS FOR REFERENCE ONLY
2. SEE ACTUAL PART DRAWING FOR SPECIFIC DESIGN
3. "S" DIMENSION IS WITH 0.080" THICK BACK PANEL INSTALLED
4. BACK PANEL IS SOLD SEPARATELY

SCREW SIZES & TORQUE VALUES

PRODUCT SIZES	BACK PANEL SCREW SIZE	BACK PANEL RECOMMENDED TORQUE	COVER SCREW SIZE	COVER SCREW RECOMMENDED TORQUE	MOUNTING FOOT SCREW SIZE	MOUNTING FOOT SCREW RECOMMENDED TORQUE	RECOMMENDED MOUNTING FLANGE TORQUE
All Sizes	#10-32 x 3/8	16 - 20 in-lbs	#10-32 x 1-1/4	20 - 24 in-lbs	#10-32 x 7/16	22 - 25 in-lbs	45 in-lbs max

Diamond Shield® Series – Opaque Cover

CATALOG NUMBER	OVERALL H X W X D	INSIDE A X B X C	MOUNTING P X R	K	L	S	T	OPT. MOUNT FEET E X F	N	J	M	SHIP WEIGHT	PANEL NUMBER
DS60604HPL DS60604HW DS60604W DS60604HLL	7.42 x 7.79 x 4.31 (188 x 198 x 110)	6.77 x 6.77 x 4.06 (172 x 172 x 103)	5.93 x 4.00 (151 x 102)	4.25 (108)	4.25 (108)	3.60 (92)	.38 (10)	8.24 x 4.00 (209 x 102)	9.02 (229)	4.56 (116)	.25 (6)	3.8 lbs	BP66*
DS80604HPL DS80604HW DS80604W DS80604HLL	9.42 x 7.79 x 4.31 (239 x 198 x 110)	8.77 x 6.77 x 4.06 (223 x 172 x 103)	7.91 x 4.00 (201 x 102)	6.25 (159)	4.25 (108)	3.60 (92)	.38 (10)	10.21 x 4.00 (259 x 102)	10.98 (279)	4.56 (116)	.25 (6)	4.1 lbs	BP86*

All measures are in inches, items in parentheses are in millimeters.

*Panel sold separately

Diamond Shield® Series – Opaque Cover

CATALOG NUMBER	OVERALL H X W X D	INSIDE A X B X C	MOUNTING P X R	K	L	S	T	OPT. MOUNT FEET E X F	N	J	M	SHIP WEIGHT	PANEL NUMBER
DS80804HPL DS80804HW DS80804W DS80804HLL	9.39 x 9.77 x 4.31 (239 x 248 x 109)	8.74 x 8.74 x 4.06 (222 x 222 x 103)	7.91 x 6.00 (201 x 152)	6.25 (159)	6.25 (159)	3.60 (92)	.38 (10)	10.21 x 6.00 (259 x 152)	10.98 (279)	4.56 (116)	.25 (6)	4.9 lbs	BP88*
DS100806HPL DS100806HW DS100806W DS100806HLL	11.42 x 9.80 x 6.31 (290 x 249 x 160)	10.73 x 8.73 x 6.06 (273 x 222 x 154)	9.89 x 6.00 (251 x 152)	8.25 (210)	6.25 (159)	5.60 (142)	.38 (10)	12.19 x 6.00 (310 x 152)	12.96 (329)	6.56 (167)	.25 (6)	6.2 lbs	BP108*
DS121006HPL DS121006HW DS121006W DS121006HLL	13.46 x 11.83 x 6.31 (342 x 301 x 160)	12.72 x 10.72 x 6.06 (322 x 272 x 154)	11.88 x 8.00 (302 x 203)	10.25 (260)	8.25 (210)	5.60 (142)	.38 (10)	14.18 x 8.00 (360 x 203)	14.95 (380)	6.56 (167)	.25 (6)	8.0 lbs	BP1210*
DS141206HPL DS141206HW DS141206W DS141206HLL	15.49 x 13.86 x 6.34 (392 x 352 x 161)	14.72 x 12.72 x 6.06 (374 x 323 x 154)	13.91 x 10.00 (353 x 254)	12.25 (311)	10.25 (260)	5.60 (142)	.38 (10)	16.21 x 10.00 (412 x 254)	16.98 (431)	6.59 (167)	.25 (6)	10.0 lbs	BP1412*
DS141208HPL DS141208HW DS141208W DS141208HLL	15.49 x 13.86 x 8.34 (392 x 352 x 212)	14.72 x 12.72 x 8.06 (372 x 322 x 205)	13.91 x 10.00 (353 x 254)	12.25 (311)	10.25 (260)	7.60 (193)	.38 (10)	16.19 x 10.00 (411 x 254)	16.96 (431)	8.59 (218)	.25 (6)	12.5 lbs	BP1412*
DS161408HPL DS161408HW DS161408W DS161408HLL	17.59 x 15.96 x 8.34 (447 x 405 x 212)	16.69 x 14.69 x 8.06 (424 x 373 x 205)	15.96 x 12.00 (405 x 305)	14.25 (362)	12.25 (311)	7.60 (193)	.38 (10)	18.26 x 12.00 (464 x 305)	19.04 (484)	8.59 (218)	.25 (6)	13.3 lbs	BP1614*
DS181610HPL DS181610HW DS181610W DS181610HLL	19.77 x 18.15 x 10.34 (502 x 461 x 263)	18.63 x 16.63 x 10.06 (473 x 422 x 256)	17.94 x 14.00 (456 x 356)	16.25 (413)	14.25 (362)	9.60 (244)	.38 (10)	20.24 x 14.00 (514 x 356)	21.02 (534)	10.59 (269)	.25 (6)	20.2 lbs	BP1816*
DS201610HPL DS201610HW DS201610W DS201610HLL	21.79 x 18.17 x 10.34 (554 x 461 x 263)	20.63 x 16.63 x 10.06 (524 x 422 x 256)	19.96 x 14.00 (507 x 356)	18.25 (463)	14.25 (362)	9.59 (244)	.38 (10)	22.26 x 14.00 (566 x 356)	23.04 (585)	10.59 (269)	.25 (6)	21.7 lbs	BPJ2016*

All measures are in inches, items in parentheses are in millimeters.

*Panel sold separately

Flush Bonded Window

HPL **CONFIGURATION**
Hinged, 2 lockable pull latches

HPL Construction

Material	SolarGuard® – Hot compression molded fiberglass reinforced polyester (thermoset)
Gasket	Poured polyurethane seamless gasket provides watertight, dust-tight environmental seal
Stainless Steel Hardware	300 Series stainless used on all hardware
Mounting Bosses	Panel mounting capability for fixed rear panel
Metal Inserts	All bosses utilize threaded brass inserts accepting 10-32 screws
Soft Edge Design	Rounded edges, minimal protrusions or exposed pocket areas for assembly of dust and debris
Bonded Window	Precision routed flush bonded Super Abrasion Resistant acrylic material for maximum visibility
Color	Available standard glacier grey (PMS 428C)

HPL Modifications

Custom Colors	pg. 21-22
Silk Screening	pg. 21-22
EMI/RFI Shielding	pg. 21-22
Custom Window	pg. 21-22
Custom Cutouts/Holes	pg. 21-22

HPL Industry Standards

NEMA 250, UL Listed UL50, UL50e, UL508A	File E64358 Type 1, 3, 3S, 4X, 12, 13
CSA Std C22.2	File LR069014 Type 1, 3, 3S, 4X, 12, 13
IEC 60529	IP66
Temperature Range	(-76°F to +274°F) (-60°C to +134°C)
Flammability Rating	UL94-5V
Window Temperature Range	(-26°F to +170°F) (-32°C to +76°C)
Self Extinguishing	Non-Halogenated, Non-flame propagating
Chemical Resistance	Full chemical resistance charts listed in appendix
NFPA No. 101 Flame Spread	Class A (1)
Outdoor Exposure UL746C	(f1) Rated

HPL Accessories

PANELS	**Aluminum**	BP_AL	pg. 174-175
	Fiberglass	BP_FG	pg. 174-175
	Stainless Steel	BP_SS	pg. 174-175
	Carbon Steel	BP_CS	pg. 174-175
	Dead Front Panels		pg. 180-181
	Mounting Feet		pg. 192
ACCESSORIES	**Drain & Breather Vents**		pg. 185
	Hole Plugs		pg. 187
	Assorted Hubs and Cord Grips		pg. 188-189
	All Other Accessories		pg. 184-194

Flush Bonded Window

CONFIGURATION HLL

Hinged, 2 lockable link latches

HLL Construction

Material	SolarGuard® – Hot compression molded fiberglass reinforced polyester (thermoset)
Gasket	Poured polyurethane seamless gasket provides watertight, dust-tight environmental seal
Stainless Steel Hardware	300 Series stainless used on all hardware
Mounting Bosses	Panel mounting capability for fixed rear panel
Metal inserts	All bosses utilize threaded brass inserts accepting 10-32 screws
Soft Edge Design	Rounded edges, minimal protrusions or exposed pocket areas for assembly of dust and debris
Bonded Window	Precision routed flush bonded Super Abrasion Resistant acrylic material for maximum visibility
Color	Available standard glacier grey (PMS 428C)

HLL Modifications

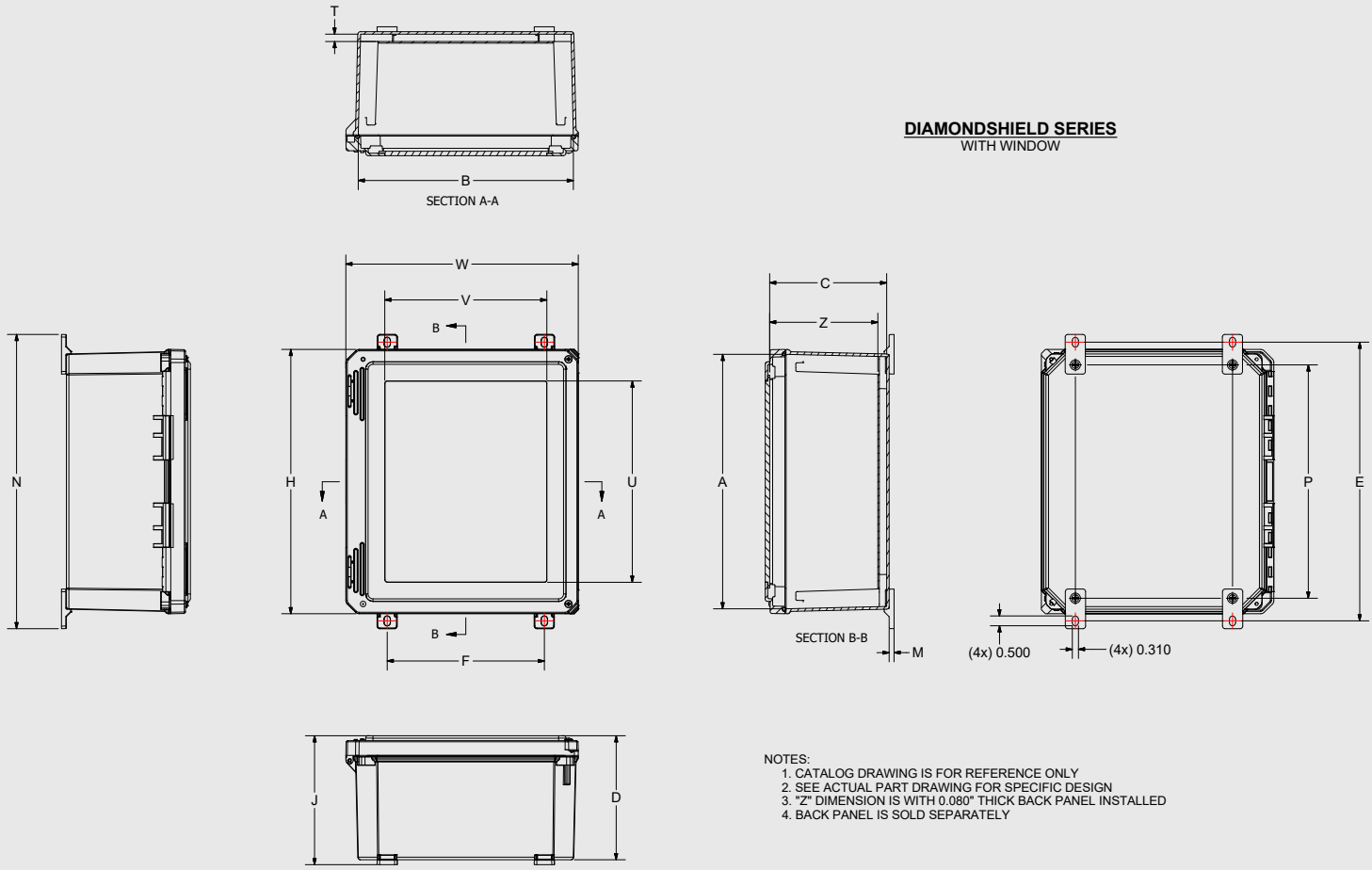
Custom Colors	pg. 21-22
Silk Screening	pg. 21-22
EMI/RFI Shielding	pg. 21-22
Custom Window	pg. 21-22
Custom Cutouts/Holes	pg. 21-22

HLL Industry Standards

NEMA 250, UL Listed UL50, UL50e, UL508A	File E64358 Type 1, 3, 3S, 4X, 12, 13
CSA Std C22.2	File LR069014 Type 1, 3, 3S, 4X, 12, 13
IEC 60529	IP66
Temperature Range	(-76°F to +274°F) (-60°C to +134°C)
Flammability Rating	UL94-5V
Window Temperature Range	(-26°F to +170°F) (-32°C to +76°C)
Self Extinguishing	Non-Halogenated, Non-flame propagating
Chemical Resistance	Full chemical resistance charts listed in appendix
NFPA No. 101 Flame Spread	Class A (1)
Outdoor Exposure UL746C	(f1) Rated

HLL Accessories

PANELS	**Aluminum**	BP_AL	pg. 174-175
	Fiberglass	BP_FG	pg. 174-175
	Stainless Steel	BP_SS	pg. 174-175
	Carbon Steel	BP_CS	pg. 174-175
	Dead Front Panels		pg. 180-181
	Mounting Feet		pg. 192
ACCESSORIES	**Drain & Breather Vents**		pg. 185
	Hole Plugs		pg. 187
	Assorted Hubs and Cord Grips		pg. 188-189
	All Other Accessories		pg. 184-194



NOTES:
1. CATALOG DRAWING IS FOR REFERENCE ONLY
2. SEE ACTUAL PART DRAWING FOR SPECIFIC DESIGN
3. "Z" DIMENSION IS WITH 0.080" THICK BACK PANEL INSTALLED
4. BACK PANEL IS SOLD SEPARATELY

SCREW SIZES & TORQUE VALUES

PRODUCT SIZES	BACK PANEL SCREW SIZE	BACK PANEL RECOMMENDED TORQUE	COVER SCREW SIZE	COVER SCREW RECOMMENDED TORQUE	MOUNTING FOOT SCREW SIZE	MOUNTING FOOT SCREW RECOMMENDED TORQUE	RECOMMENDED MOUNTING FLANGE TORQUE
All Sizes	#10-32 x 3/8	16 - 20 in-lbs	#10-32 x 1-1/4	20 - 24 in-lbs	#10-32 x 7/16	22 - 25 in-lbs	45 in-lbs max

Diamond Shield® Series – Flush Bonded Window

CATALOG NUMBER	OVERALL H X W X D	INSIDE A X B X C	WINDOW AREA U X V	MOUNTING P X R	Z	K	L	S	T	OPT. MOUNT FEET E X F	N	J	M	SHIP WEIGHT	PANEL NUMBER
DSW60604HPL	7.42 x 7.79 x 4.31 (188 x 198 x 110)	6.77 x 6.77 (172 x 172 x 103)	4.25 x 4.25 (107.95 x 107.95)	5.93 x 4.00 (151 x 102)	3.48 (88.26)	4.25 (108)	4.25 (108)	3.60 (92)	.38 (10)	8.24 x 4.00 (209 x 102)	9.02 (229)	4.56 (116)	.25 (6)	3.8 lbs	BP66*
DSW80604HPL	9.42 x 7.79 x 4.31 (239 x 198 x 110)	8.77 x 6.77 (223 x 172 x 103)	6.25 x 4.25 (158.75 x 107.95)	7.91 x 4.00 (201 x 102)	3.48 (88.26)	6.25 (159)	4.25 (108)	3.60 (92)	.38 (10)	10.21 x 4.00 (259 x 102)	10.98 (279)	4.56 (116)	.25 (6)	4.1 lbs	BP86*
DSW80804HPL	9.39 x 9.77 x 4.31 (239 x 248 x 110)	8.74 x 8.74 (222 x 222 x 103)	6.25 x 6.25 (158.75 x 158.75)	7.91 x 6.00 (201 x 152)	3.48 (88.26)	6.25 (159)	6.25 (159)	3.60 (92)	.38 (10)	10.21 x 6.00 (259 x 152)	10.98 (279)	4.56 (116)	.25 (6)	4.9 lbs	BP88*

All measures are in inches, items in parentheses are in millimeters.

**Panel sold separately*

Diamond Shield® Series – Flush Bonded Window

CATALOG NUMBER	OVERALL H X W X D	INSIDE A X B X C	WINDOW AREA U X V	MOUNTING P X R	Z	K	L	S	T	OPT. MOUNT FEET E X F	N	J	M	SHIP WEIGHT	PANEL NUMBER
DSW100806HPL DSW100806HLL	11.42 x 9.80 x 6.31 (290 x 249 x 160)	10.73 x 8.73 (273 x 222 x 154)	8.25 x 6.25 (209.55 x 158.75)	9.89 x 6.00 (251 x 152)	5.48 (139.19)	8.25 (210)	6.25 (159)	5.60 (142)	.38 (10)	12.19 x 6.00 (310 x 152)	12.96 (329)	6.56 (167)	.25 (6)	6.2 lbs	BP108*
DSW121006HPL	13.46 x 11.83 x 6.31 (342 x 301 x 160)	12.72 x 10.72 (322 x 272 x 154)	10.25 x 8.25 (260.35 x 209.55)	11.88 x 8.00 (302 x 203)	5.48 (139.19)	10.25 (260)	8.25 (210)	5.60 (142)	.38 (10)	14.18 x 8.00 (360 x 203)	14.95 (380)	6.56 (167)	.25 (6)	8.0 lbs	BP1210*
DSW141206HPL	15.49 x 13.86 x 6.34 (393 x 352 x 161)	14.72 x 12.72 (374 x 323 x 154)	12.25 x 10.25 (311.15 x 260.35)	13.91 x 10.00 (353 x 254)	5.48 (139.19)	12.25 (311)	10.25 (260)	5.60 (142)	.38 (10)	16.21 x 10.00 (412 x 254)	16.98 (431)	6.59 (167)	.25 (6)	10.0 lbs	BP1412*
DSW141208HPL	15.49 x 13.86 x 8.34 (393 x 352 x 212)	14.72 x 12.72 (372 x 322 x 205)	12.25 x 10.25 (311.15 x 260.35)	13.91 x 10.00 (353 x 254)	7.48 (189.99)	12.25 (311)	10.25 (260)	7.60 (193)	.38 (10)	16.19 x 10.00 (411 x 254)	16.96 (431)	8.59 (218)	.25 (6)	12.5 lbs	BP1412*
DSW161408HPL DSW161408HLL	17.59 x 15.96 x 8.34 (447 x 405 x 212)	16.69 x 14.69 (424 x 373 x 205)	14.25 x 12.25 (361.95 x 311.15)	15.96 x 12.00 (405 x 305)	7.48 (189.99)	14.25 (362)	12.25 (311)	7.60 (193)	.38 (10)	18.26 x 12.00 (464 x 305)	19.04 (484)	8.59 (218)	.25 (6)	13.3 lbs	BP1614*
DSW181610HPL DSW181610HLL	19.77 x 18.15 x 10.34 (502 x 461 x 263)	18.63 x 16.63 (473 x 422 x 256)	16.25 x 14.25 (412.75 x 361.95)	17.94 x 14.00 (456 x 356)	9.48 (240.79)	16.25 (413)	14.25 (362)	9.60 (244)	.38 (10)	20.24 x 14.00 (514 x 356)	21.02 (534)	10.59 (269)	.25 (6)	20.2 lbs	BP1816*
DSW201610HPL DSW201610HLL	21.79 x 18.16 x 10.34 (554 x 461 x 263)	20.63 x 16.63 (524 x 422 x 256)	18.25 x 14.25 (463.55 x 361.95)	19.96 x 14.00 (507 x 356)	9.46 (240.28)	18.25 (463)	14.25 (362)	9.59 (244)	.38 (10)	22.26 x 14.00 (566 x 356)	23.04 (585)	10.59 (269)	.25 (6)	21.7 lbs	BPJ2016*

All measures are in inches, items in parentheses are in millimeters.

*Panel sold separately

Clear Cover

HPL **CONFIGURATION**
Hinged, 2 lockable pull latches

HPL Construction

Material	SolarGuard® – Hot compression molded fiberglass reinforced polyester (thermoset)
Gasket	Poured polyurethane seamless gasket provides watertight, dust-tight environmental seal
Stainless Steel Hardware	300 Series stainless used on all hardware
Mounting Bosses	Panel mounting capability for fixed rear panel
Metal Inserts	All bosses utilize threaded brass inserts accepting 10-32 screws
Soft Edge Design	Rounded edges, minimal protrusions or exposed pocket areas for assembly of dust and debris
Cover	Clear polycarbonate with UV inhibitors
Color	Available standard glacier grey (PMS 428C)

HPL Modifications

Custom Colors	pg. 21-22
Silk Screening	pg. 21-22
EMI/RFI Shielding	pg. 21-22
Custom Window	pg. 21-22
Custom Cutouts/Holes	pg. 21-22

HPL Industry Standards

NEMA 250, UL Listed **UL50, UL50e, UL508A**	File E64358 Type 1, 3, 3S, 4X, 12, 13
CSA Std C22.2	File LR069014 Type 1, 3, 3S, 4X, 12, 13
IEC 60529	IP66
Temperature Range	(-76°F to +274°F) (-60°C to +134°C)
Flammability Rating	UL94-5V
Cover Temperature Range	(-40°F to +248°F) (-40°C to +120°C)
Cover Flammability	UL94-5V
Self Extinguishing	Non-halogenated, Non-flame propagating
Chemical Resistance	Full chemical resistance charts listed in appendix
NFPA No. 101 Flame Spread	Class A (1)
Outdoor Exposure UL746C	(f1) Rated

HPL Accessories

PANELS	**Aluminum**	BP_AL	pg. 174-175
	Fiberglass	BP_FG	pg. 174-175
	Stainless Steel	BP_SS	pg. 174-175
	Carbon Steel	BP_CS	pg. 174-175
	Dead Front Panels		pg. 180-181
	Mounting Feet		pg. 192
ACCESSORIES	**Drain & Breather Vents**		pg. 185
	Hole Plugs		pg. 187
	Assorted Hubs and Cord Grips		pg. 188-189
	All Other Accessories		pg. 184-194

Clear Cover

CONFIGURATION
Hinged, 2 cover screws HW

HW Construction

Material	SolarGuard® – Hot compression molded fiberglass reinforced polyester (thermoset)
Gasket	Poured polyurethane seamless gasket provides watertight, dust-tight environmental seal
Stainless Steel Hardware	300 Series stainless used on all hardware
Mounting Bosses	Panel mounting capability for fixed rear panel
Metal Inserts	All bosses utilize threaded brass inserts accepting 10-32 screws
Soft Edge Design	Rounded edges, minimal protrusions or exposed pocket areas for assembly of dust and debris
Cover	Clear polycarbonate with UV inhibitors
Color	Available standard glacier grey (PMS 428C)

HW Modifications

Custom Colors	pg. 21-22
Silk Screening	pg. 21-22
EMI/RFI Shielding	pg. 21-22
Custom Window	pg. 21-22
Custom Cutouts/Holes	pg. 21-22

HW Industry Standards

NEMA 250, UL Listed UL50, UL50e, UL508A	File E64358 Type 1, 3, 3S, 4X, 12, 13
CSA Std C22.2	File LR069014 Type 1, 3, 3S, 4X, 12, 13
IEC 60529	IP66
Temperature Range	(-76°F to +274°F) (-60°C to +134°C)
Flammability Rating	UL94-5V
Cover Temperature Range	(-40°F to +248°F) (-40°C to +120°C)
Cover Flammability	UL94-5V
Self Extinguishing	Non-halogenated, Non-flame propagating
Chemical Resistance	Full chemical resistance charts listed in appendix
NFPA No. 101 Flame Spread	Class A (1)
Outdoor Exposure UL746C	(f1) Rated

HW Accessories

PANELS	**Aluminum**	BP_AL	pg. 174-175
	Fiberglass	BP_FG	pg. 174-175
	Stainless Steel	BP_SS	pg. 174-175
	Carbon Steel	BP_CS	pg. 174-175
	Dead Front Panels		pg. 180-181
	Mounting Feet		pg. 192
ACCESSORIES	**Drain & Breather Vents**		pg. 185
	Hole Plugs		pg. 187
	Assorted Hubs and Cord Grips		pg. 188-189
	All Other Accessories		pg. 184-194

Clear Cover

W **CONFIGURATION**
4 cover screws, lift off cover

W Construction

Material	SolarGuard® – Hot compression molded fiberglass reinforced polyester (thermoset)
Gasket	Poured polyurethane seamless gasket provides watertight, dust-tight environmental seal
Recessed Screws	No protruding surfaces
Stainless Steel Hardware	300 Series stainless used on all hardware
Mounting Bosses	Panel mounting capability for fixed rear panel
Metal Inserts	All bosses utilize threaded brass inserts accepting 10-32 screws
Soft Edge Design	Rounded edges, minimal protrusions or exposed pocket areas for assembly of dust and debris
Cover	Clear polycarbonate with UV inhibitors
Color	Available Standard Glacier Grey (PMS 428C)

W Industry Standards

NEMA 250, UL Listed UL50, UL50e, UL508A	File E64358 Type 1, 3, 3S, 4X, 12, 13
CSA Std C22.2	File LR069014 Type 1, 3, 3S, 4X, 12, 13
IEC 60529	IP66
Temperature Range	(-76°F to +274°F) (-60°C to +134°C)
Flammability Rating	UL94-5V
Cover Temperature Range	(-40°F to +248°F) (-40°C to +120°C)
Cover Flammability	UL94-5V
Self Extinguishing	Non-halogenated, Non-flame propagating
Chemical Resistance	Full chemical resistance charts listed in appendix
NFPA No. 101 Flame Spread	Class A (1)
Outdoor Exposure UL746C	(f1) Rated

W Modifications

Custom Colors	pg. 21-22
Silk Screening	pg. 21-22
EMI/RFI Shielding	pg. 21-22
Custom Window	pg. 21-22
Custom Cutouts/Holes	pg. 21-22

W Accessories

PANELS	**Aluminum**	BP_AL	pg. 174-175
	Fiberglass	BP_FG	pg. 174-175
	Stainless Steel	BP_SS	pg. 174-175
	Carbon Steel	BP_CS	pg. 174-175
	Dead Front Panels		pg. 180-181
	Mounting Feet		pg. 192
ACCESSORIES	**Drain & Breather Vents**		pg. 185
	Hole Plugs		pg. 187
	Assorted Hubs and Cord Grips		pg. 188-189
	All Other Accessories		pg. 184-194

Clear Cover

CONFIGURATION
Hinged, 2 lockable link latches HLL

HLL Construction

Material	SolarGuard® – Hot compression molded fiberglass reinforced polyester (thermoset)
Gasket	Poured polyurethane seamless gasket provides watertight, dust-tight environmental seal
Stainless Steel Hardware	300 Series stainless used on all hardware
Mounting Bosses	Panel mounting capability for fixed rear panel
Metal Inserts	All bosses utilize threaded brass inserts accepting 10-32 screws
Soft Edge Design	Rounded edges, minimal protrusions or exposed pocket areas for assembly of dust and debris
Cover	Clear polycarbonate with UV inhibitors
Color	Available Standard Glacier Grey (PMS 428C)

HLL Modifications

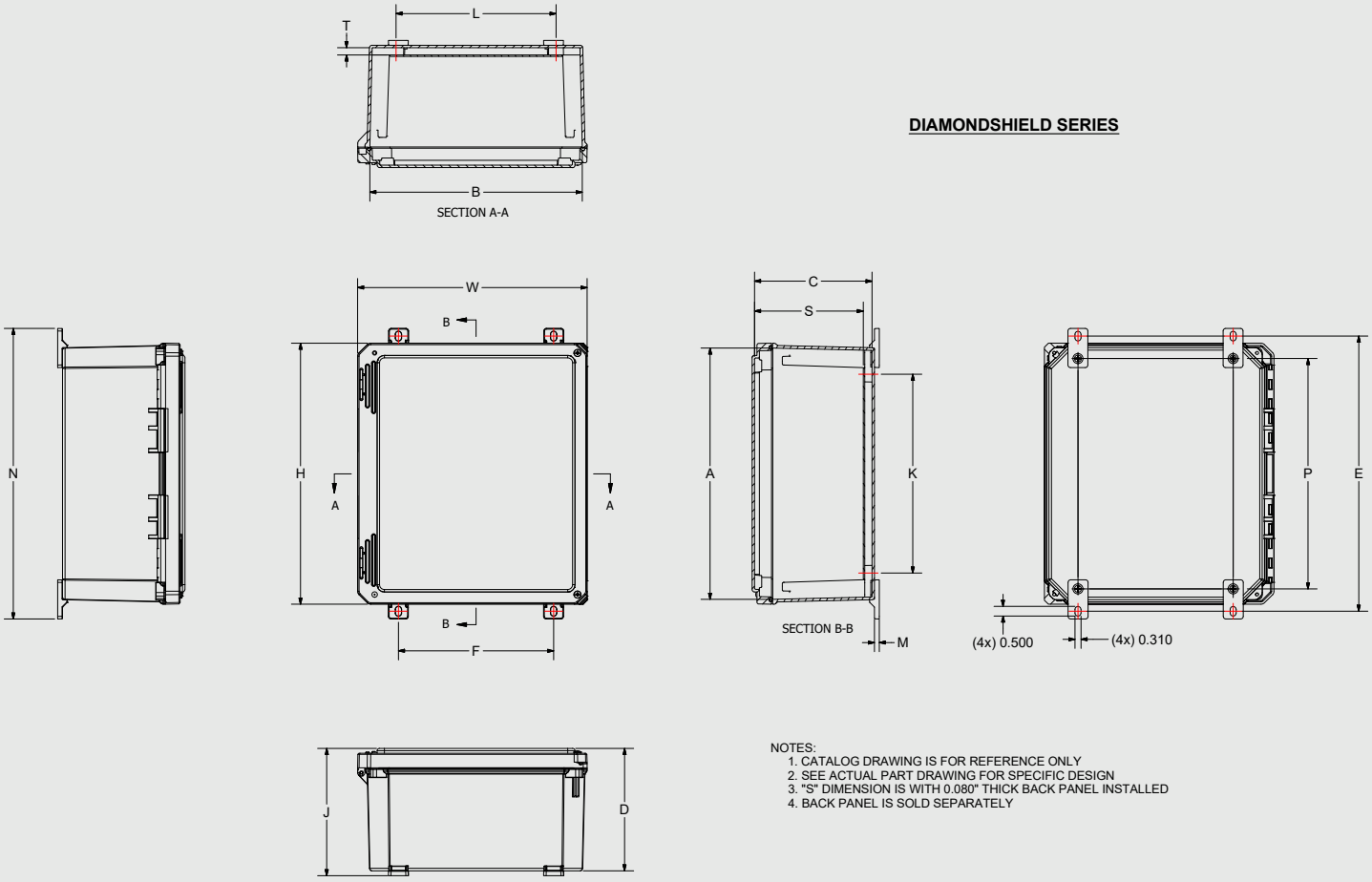
Custom Colors	pg. 21-22
Silk Screening	pg. 21-22
EMI/RFI Shielding	pg. 21-22
Custom Window	pg. 21-22
Custom Cutouts/Holes	pg. 21-22

HLL Industry Standards

NEMA 250, UL Listed UL50, UL50e, UL508A	File E64358 Type 1, 3, 3S, 4X, 12, 13
CSA Std C22.2	File LR069014 Type 1, 3, 3S, 4X, 12, 13
IEC 60529	IP66
Temperature Range	(-76°F to +274°F) (-60°C to +134°C)
Flammability Rating	UL94-5V
Cover Temperature Range	(-40°F to +248°F) (-40°C to +120°C)
Cover Flammability	UL94-5V
Self Extinguishing	Non-halogenated, Non-flame propagating
Chemical Resistance	Full chemical resistance charts listed in appendix
NFPA No. 101 Flame Spread	Class A (1)
Outdoor Exposure UL746C	(f1) Rated

HLL Accessories

PANELS	**Aluminum**	BP_AL	pg. 174-175
	Fiberglass	BP_FG	pg. 174-175
	Stainless Steel	BP_SS	pg. 174-175
	Carbon Steel	BP_CS	pg. 174-175
	Dead Front Panels		pg. 180-181
	Mounting Feet		pg. 192
ACCESSORIES	**Drain & Breather Vents**		pg. 185
	Hole Plugs		pg. 187
	Assorted Hubs and Cord Grips		pg. 188-189
	All Other Accessories		pg. 184-194



NOTES:
1. CATALOG DRAWING IS FOR REFERENCE ONLY
2. SEE ACTUAL PART DRAWING FOR SPECIFIC DESIGN
3. "S" DIMENSION IS WITH 0.080" THICK BACK PANEL INSTALLED
4. BACK PANEL IS SOLD SEPARATELY

SCREW SIZES & TORQUE VALUES

PRODUCT SIZES	BACK PANEL SCREW SIZE	BACK PANEL RECOMMENDED TORQUE	COVER SCREW SIZE	COVER SCREW RECOMMENDED TORQUE	MOUNTING FOOT SCREW SIZE	MOUNTING FOOT SCREW RECOMMENDED TORQUE	RECOMMENDED MOUNTING FLANGE TORQUE
All Sizes	#10-32 x 3/8	16 - 20 in-lbs	#10-32 x 1-1/4	20 - 24 in-lbs	#10-32 x 7/16	22 - 25 in-lbs	45 in-lbs max

Diamond Shield® Series – Clear Cover

CATALOG NUMBER	OVERALL H X W X D	INSIDE A X B X C	MOUNTING P X R	K	L	S	T	OPT. MOUNT FEET E X F	N	J	M	SHIP WEIGHT	PANEL NUMBER
DSCC60604HPL DSCC60604HW DSCC60604W DSCC60604HLL	7.42 x 7.79 x 4.31 (188 x 198 x 110)	6.77 x 6.77 x 4.06 (172 x 172 x 103)	5.93 x 4.00 (151 x 102)	4.25 (108)	4.25 (108)	3.60 (92)	.38 (10)	8.24 x 4.00 (209 x 102)	9.02 (229)	4.56 (116)	.25 (6)	3.8 lbs	BP66*
DSCC80604HPL DSCC80604HW DSCC80604W DSCC80604HLL	9.42 x 7.79 x 4.31 (239 x 198 x 110)	8.77 x 6.77 x 4.06 (223 x 172 x 103)	7.91 x 4.00 (201 x 102)	6.25 (159)	4.25 (108)	3.60 (92)	.38 (10)	10.21 x 4.00 (259 x 102)	10.98 (279)	4.56 (116)	.25 (6)	4.1 lbs	BP86*

All measures are in inches, items in parentheses are in millimeters.

*Panel sold separately

Diamond Shield® Series – Clear Cover

CATALOG NUMBER	OVERALL H X W X D	INSIDE A X B X C	MOUNTING P X R	K	L	S	T	OPT. MOUNT FEET E X F	N	J	M	SHIP WT.	PANEL NUMBER
DSCC80804HPL DSCC80804HW DSCC80804W DSCC80804HLL	9.39 x 9.77 x 4.31 (239 x 248 x 110)	8.74 x 8.74 x 4.06 (222 x 222 x 103)	7.91 x 6.00 (201 x 152)	6.25 (159)	6.25 (159)	3.60 (92)	.38 (10)	10.21 x 6.00 (259 x 152)	10.98 (279)	4.56 (116)	.25 (6)	4.9 lbs	BP88*
DSCC100806HPL DSCC100806HW DSCC100806W DSCC100806HLL	11.42 x 9.80 x 6.31 (290 x 249 x 160)	10.73 x 8.73 x 6.06 (273 x 222 x 154)	9.89 x 6.00 (251 x 152)	8.25 (210)	6.25 (159)	5.60 (142)	.38 (10)	12.19 x 6.00 (310 x 152)	12.96 (329)	6.56 (167)	.25 (6)	6.2 lbs	BP108*
DSCC121006HPL DSCC121006HW DSCC121006W DSCC121006HLL	13.46 x 11.83 x 6.31 (342 x 301 x 160)	12.72 x 10.72 x 6.06 (322 x 272 x 154)	11.88 x 8.00 (302 x 203)	10.25 (260)	8.25 (210)	5.60 (142)	.38 (10)	14.18 x 8.00 (360 x 203)	14.95 (380)	6.56 (167)	.25 (6)	8.0 lbs	BP1210*
DSCC141206HPL DSCC141206HW DSCC141206W DSCC141206HLL	15.49 x 13.86 x 6.34 (393 x 352 x 161)	14.72 x 12.72 x 6.06 (374 x 323 x 154)	13.91 x 10.00 (353 x 254)	12.25 (311)	10.25 (260)	5.60 (142)	.38 (10)	16.21 x 10.00 (412 x 254)	16.98 (431)	6.59 (167)	.25 (6)	10.0 lbs	BP1412*
DSCC141208HPL DSCC141208HW DSCC141208W DSCC141208HLL	15.49 x 13.86 x 8.34 (393 x 352 x 212)	14.72 x 12.72 x 8.06 (372 x 322 x 205)	13.91 x 10.00 (353 x 254)	12.25 (311)	10.25 (260)	7.60 (193)	.38 (10)	16.19 x 10.00 (411 x 254)	16.96 (431)	8.59 (218)	.25 (6)	12.5 lbs	BP1412*
DSCC161408HPL DSCC161408HW DSCC161408W DSCC161408HLL	17.59 x 15.96 x 8.34 (447 x 405 x 212)	16.69 x 14.69 x 8.06 (424 x 373 x 205)	15.96 x 12.00 (405 x 305)	14.25 (362)	12.25 (311)	7.60 (193)	.38 (10)	18.26 x 12.00 (464 x 305)	19.04 (484)	8.59 (218)	.25 (6)	13.3 lbs	BP1614*

All measures are in inches, items in parentheses are in millimeters.

**Panel sold separately*

Panel Management System®

The design difference is unsurpassed

Stahlin's innovative "No-Limits" Patented Panel Management System® enables Diamond Shield® users to take maximum advantage of ALL enclosure space... including the inside of the cover!

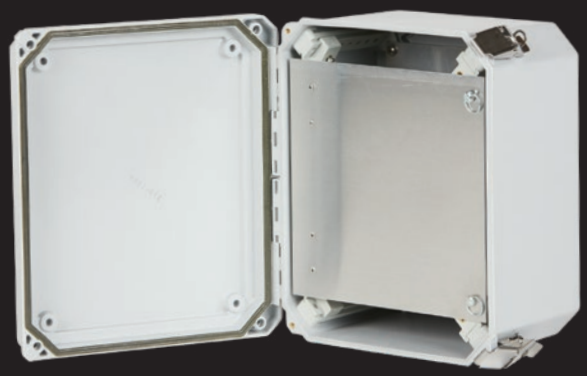
- Back Panel
- Variable Height Stationary Panel
- Variable Height Swing Panel
- Dead Front Swing Panel
- Cover Panel

Benefits:

- Optimized use and function of all usable space within the enclosure while assisting in the mounting of cover mounted devices, such as touchpads and printed circuit boards.
- Maximized visibility of panels that offer critical feedback, such as instrumentation, while preserving the integrity of the enclosure
- Ability to meet unique visual requirements usually associated with a dead front panel.
- Ability to externally assemble, then "drop in" to the enclosure DIN rail mounted components, thereby minimizing assembly, modification and field servicing.
- Maximum surface area for pushbutton or touch pad layout. Maximizes end users' design possibilities.
- Offers restricted access to areas of adjustment calibration and dangerous voltage.

Diamond Shield® Series

Go from this...



To this!

Panel Options – Panel Management System®

BACK PANEL

- Traditional sized back panel
- Common industry mounting footprint
- Wide choice of material

DEAD FRONT SWING PANEL

- Mounts at the front of the enclosure
- Larger surface area when compared to the variable height swing panel
- Hinged on one side, secured to the other
- Used in conjunction with corner mounting posts

VARIABLE HEIGHT STATIONARY PANEL

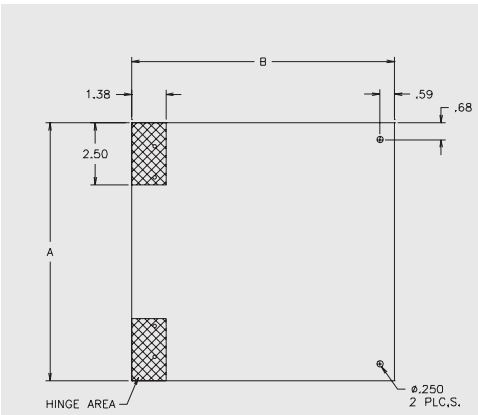
- Mounts at any height in the enclosure base including as back panel or use as a top stationary dead front panel
- Larger panel area than traditional back panels maximizes surface mounting area
- Used in conjunction with corner mounting posts

VARIABLE HEIGHT SWING PANEL

- Mounts at any height in the enclosure base
- Hinged on one side, secured to the other
- Used in conjunction with corner mounting posts

Variable Height Swing Panels – Panel Management System®

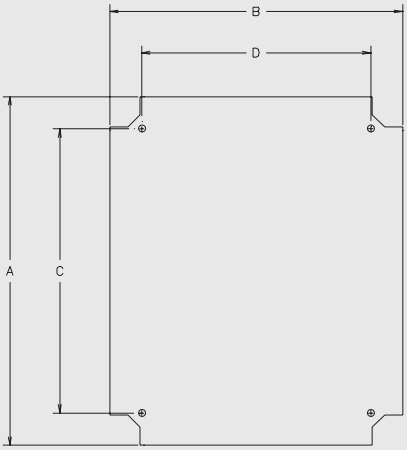
CATALOG NUMBER	A	B	PANEL THK.	PANEL TYPE
P806ASAL	6.38 (162)	6.56 (1167)	.080 (2)	Flat
P808ASAL	6.38 (162)	8.56 (217)	.080 (2)	Flat
P1008ASAL	8.38 (213)	8.56 (217)	.080 (2)	Flat
P1210ASAL	10.38 (264)	10.56 (268)	.080 (2)	Flat
P1412ASAL	12.38 (314)	12.56 (319)	.080 (2)	Flat
P1614ASAL	14.38 (365)	14.56 (370)	.080 (2)	Flat
P1816ASAL	16.38 (416)	16.56 (421)	.080 (2)	Flat
P2016ASAL	18.38 (467)	16.56 (421)	.080 (2)	Flat



Caution: Metric units are for reference; do not convert.
Note: Hardware included.

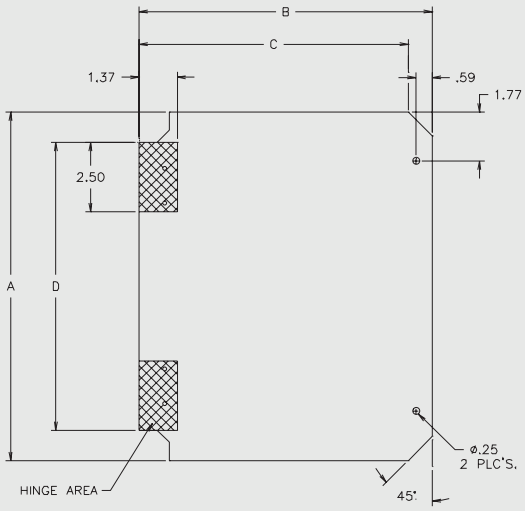
Variable Height Stationary Panels – Panel Management System®

CATALOG NUMBER	A	B	C	D	PANEL THK.	PANEL TYPE	HOLE DIA.	# OF HOLES
P606STAL	6.56 (167)	6.56 (167)	4.25 (108)	4.25 (108)	.080 (2)	Flat	.25 (6)	4
P806STAL	8.56 (217)	6.56 (167)	6.25 (159)	4.25 (108)	.080 (2)	Flat	.25 (6)	4
P808STAL	8.56 (217)	8.56 (217)	6.25 (159)	6.25 (159)	.080 (2)	Flat	.25 (6)	4
P1008STAL	10.56 (268)	8.56 (217)	8.25 (210)	6.25 (159)	.080 (2)	Flat	.25 (6)	4
P1210STAL	12.56 (319)	10.56 (268)	10.25 (210)	8.25 (260)	.080 (2)	Flat	.25 (6)	4
P1412STAL	14.56 (370)	12.56 (319)	12.25 (311)	10.25 (260)	.080 (2)	Flat	.25 (6)	4
P1614STAL	16.56 (421)	14.56 (370)	14.25 (362)	12.25 (311)	.080 (2)	Flat	.25 (6)	4
P1816STAL	18.56 (471)	16.56 (421)	16.25 (413)	14.25 (362)	.080 (2)	Flat	.25 (6)	4
P2016STAL	20.56 (522)	16.56 (421)	18.25 (464)	14.25 (362)	.080 (2)	Flat	.25 (6)	4



Caution: Metric units are for reference; do not convert.

Dead Front Swing Panels – Panel Management System®



CATALOG NUMBER	A	B	C	D	PANEL THK.	PANEL TYPE
P806SWAL	8.56 (217)	6.56 (167)	5.70 (145)	6.38 (162)	.080 (2)	Flat
P808SWAL	8.56 (217)	8.56 (217)	7.70 (196)	6.38 (162)	.080 (2)	Flat
P1008SWAL	10.56 (268)	8.56 (217)	7.70 (196)	8.38 (213)	.080 (2)	Flat
P1210SWAL	12.56 (319)	10.56 (268)	10.38 (246)	9.70 (263)	.080 (2)	Flat
P1412SWAL	14.56 (370)	12.56 (319)	11.70 (297)	12.38 (314)	.080 (2)	Flat
P1614SWAL	16.56 (421)	14.56 (370)	13.70 (330)	14.38 (365)	.080 (2)	Flat
P1816SWAL	18.56 (471)	16.56 (421)	15.70 (399)	16.38 (467)	.080 (2)	Flat
P2016SWAL	20.56 (522)	16.56 (421)	15.70 (399)	17.19 (467)	.080 (2)	Flat

Caution: Metric units are for reference; do not convert.

Diamond Shield® Covers Only – Panel Management System®

OPAQUE COVERS	CLEAR COVERS	VIEWING WINDOW COVERS
DS606CVR	DSCC606CVR	DSW606CVR
DS806CVR	DSCC806CVR	DSW806CVR
DS808CVR	DSCC808CVR	DSW808CVR
DS1008CVR	DSCC1008CVR	DSW1008CVR
DS1210CVR	DSCC1210CVR	DSW1210CVR
DS1412CVR	DSCC1412CVR	DSW1412CVR
DS1614CVR	DSCC1614CVR	DSW1614CVR
DS1816CVR	DSCC1816CVR	DSW1816CVR
DS2016CVR	DSCC2016CVR	DSW2016CVR

Includes gasketed cover only – No hardware included.

Panel Kits – Panel Management System®

Accessories only, Panels NOT included

CATALOG NUMBER	STATIONARY PANEL ACCESSORY KIT	STATIONARY PANEL BRACKET KIT	SWING PANEL ACCESSORY KIT	SWING PANEL BRACKET KIT	CORNER POST KIT
60604	DS4PKA	DSAPBKT	N/A	N/A	DS4POST
80604	DS4PKA	DSAPBKT	DS4SPKA	DSSPBKT	DS4POST
80804	DS4PKA	DSAPBKT	DS4SPKA	DSSPBKT	DS4POST
100806	DS6PKA	DSAPBKT	DS6SPKA	DSSPBKT	DS6POST
121006	DS6PKA	DSAPBKT	DS6SPKA	DSSPBKT	DS6POST
141206	DS6PKA	DSAPBKT	DS6SPKA	DSSPBKT	DS6POST
141208	DS8PKA	DSAPBKT	DS8SPKA	DSSPBKT	DS8POST
161408	DS8PKA	DSAPBKT	DS8SPKA	DSSPBKT	DS8POST
181610	DS10PKA	DSAPBKT	DS10SPKA	DSSPBKT	DS10POST
201610	DS10PKA	DSAPBKT	DS10SPKA	DSSPBKT	DS10POST

CORNER POST KIT

Panel & Accessory Combo Kits – Panel Management System®

Includes Panel

CATALOG NUMBER	DEAD FRONT SWING PANEL ACCESSORY KIT	VARIABLE HEIGHT SWING PANEL ACCESSORY KIT	VARIABLE HEIGHT STATIONARY PANEL ACCESSORY KIT	VARIABLE HEIGHT BACK PANEL BRACKET KIT
60604	N/A	N/A	DS60604PKA	DS60604BPKA
80604	DS80604SPK	DS80604SPKA	DS80604PKA	DS80604BPKA
80804	DS80804SPK	DS80804SPKA	DS80804PKA	DS80804BPKA
100806	DS100806SPK	DS100806SPKA	DS100806PKA	DS100806BPKA
121006	DS121006SPK	DS121006SPKA	DS121006PKA	DS121006BPKA
141206	DS141206SPK	DS141206SPKA	DS141206PKA	DS141206BPKA
141208	DS141208SPK	DS141208SPKA	DS141208PKA	DS141208BPKA
161408	DS161408SPK	DS161408SPKA	DS161408PKA	DS161408BPKA
181610	DS181610SPK	DS181610SPKA	DS181610PKA	DS181610BPKA
201610	DS201610SPK	DS201610SPKA	DS201610PKA	DS201610BPKA

SWING PANEL ACCESSORY KIT

Other Accessory Kits – Panel Management System®

CATALOG NUMBER	MTG. FOOT KIT	OPAQUE COVER SCREW KIT	CLEAR COVER SCREW KIT	LINK LATCH KIT	PULL LATCH KIT	HINGE KIT
60604	DSMGFTKIT	DSWKIT	DSCCWKIT	DSHLLKIT	DSHPLKIT	DS3HINGEKIT
80604	DSMGFTKIT	DSWKIT	DSCCWKIT	DSHLLKIT	DSHPLKIT	DS4HINGEKIT
80804	DSMGFTKIT	DSWKIT	DSCCWKIT	DSHLLKIT	DSHPLKIT	DS4HINGEKIT
100806	DSMGFTKIT	DSWKIT	DSCCWKIT	DSHLLKIT	DSHPLKIT	DS5HINGEKIT
121006	DSMGFTKIT	DSWKIT	DSCCWKIT	DSHLLKIT	DSHPLKIT	DS5HINGEKIT
141206	DSMGFTKIT	DSWKIT	DSCCWKIT	DSHLLKIT	DSHPLKIT	DS6HINGEKIT
141208	DSMGFTKIT	DSWKIT	DSCCWKIT	DSHLLKIT	DSHPLKIT	DS6HINGEKIT
161408	DSMGFTKIT	DSWKIT	DSCCWKIT	DSHLLKIT	DSHPLKIT	DS6HINGEKIT
181610	DSMGFTKIT	DSWKIT	DSCCWKIT	DSHLLKIT	DSHPLKIT	DS6HINGEKIT
201610	DSMGFTKIT	DSWKIT	DSCCWKIT	DSHLLKIT	DSHPLKIT	DS6HINGEKIT

Classic Series

Classic Series

The **Classic Series** enclosures are designed for general electrical and electronic applications as well as applications requiring broader environmental concerns.

These enclosures enhance the appearance of any instrument installation. They are especially suited for high visibility locations found in both industrial and commercial applications, but the chemical resistance and watertight capabilities make them ideal across a broad spectrum of environmental installations as well.

Attributes

- Available in 2 cover options:
  1. Opaque cover
  2. Flush bonded window
- Stands up to an exceptionally broad range of chemical exposures
- High impact resistance
- Double insulated material. No incidental electrical contact
- Hidden hinge design
- UV Resistant
- Soft edge design, smooth lines, flush cover
- Super abrasion-resistant acrylic window
- High temperature, flame retardant, non-corrosive, environmental designs

Industry Standards

NEMA 250, UL Listed UL50, UL50e, UL508A	File E64358 Type 1, 3, 3R, 3S, 4X, 12
CSA Std C22.2	File LR069014 Type 1, 3, 3R, 3S, 4X, 12
UL1741	File E333478 W, HW, HL, HPL
Temperature Range	(-76°F to +274°F) (-60°C to +134°C)
Window Temperature Range	(-26°F to +170°F) (-32°C to +76°C)
Flammability Rating	UL94-5V
Self Extinguishing	Non-halogenated, Non-flame propagating
Chemical Resistance	Full chemical resistance charts listed in appendix
NFPA No. 101 Flame Spread	Class A (1)
Outdoor UV Exposure	(f1) Rated

Product Configurations

OPAQUE COVER

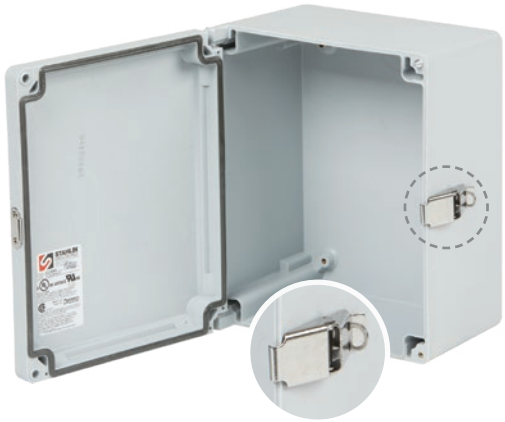
HPL	HW	W	HLL	HL
HINGED, PADLOCK LATCH	HINGED, 2 COVER SCREWS	4 COVER SCREWS, LIFT OFF COVER	HINGED, TWIST LATCH	HINGED, THROUGH-THE-DOOR LATCH

WINDOW COVER

HPL	HW	W	HLL
HINGED, PADLOCK LATCH	HINGED, 2 COVER SCREWS	4 COVER SCREWS, LIFT OFF COVER	HINGED, TWIST LATCH

Opaque Cover

HPL **CONFIGURATION**
Hinged, padlock latch



HPL Construction

Material	SolarGuard® – Hot compression molded fiberglass reinforced polyester (thermoset)
Gasket	Poured polyurethane seamless gasket provides watertight, dust-tight environmental seal
Stainless Steel Hardware	300 Series stainless used on all external hardware
Mounting Bosses	Panel mounting capability for fixed rear panel
Metal Inserts	All bosses utilize threaded brass inserts accepting 10-32 screws
Soft Edge Design	Rounded edges, minimal protrusions or exposed pocket areas for assembly of dust and debris
Color	Available standard glacier grey (PMS 428C)

HPL Modifications

Custom Colors	pg. 21-22
Silk Screening	pg. 21-22
EMI/RFI Shielding	pg. 21-22
Custom Window	pg. 21-22
Custom Cutouts/Holes	pg. 21-22

HPL Industry Standards

NEMA 250, UL Listed **UL50, UL50e, UL508A**	File E64358 Type 1, 3, 3R, 3S, 4X, 12
CSA Std C22.2	File LR069014 Type 1, 3, 3R, 3S, 4X, 12
Temperature Range	(-76°F to +274°F) (-60°C to +134°C)
Flammability Rating	UL94-5V
Self Extinguishing	Non-halogenated, Non-flame propagating
Chemical Resistance	Full chemical resistance charts listed in appendix
NFPA No. 101 Flame Spread	Class A (1)
Outdoor Exposure UL746C	(f1) Rated

HPL Accessories

PANELS	**Aluminum**	BP_AL	pg. 174-175
	Fiberglass	BP_FG	pg. 174-175
	Stainless Steel	BP_SS	pg. 174-175
	Carbon Steel	BP_CS	pg. 174-175
	Dead Front Panels		pg. 180-181
	Mounting Feet		pg. 192
ACCESSORIES	**Drain & Breather Vents**		pg. 185
	Hole Plugs		pg. 187
	Assorted Hubs and Cord Grips		pg. 188-189
	All Other Accessories		pg. 184-194

Opaque Cover

CONFIGURATION
Hinged, 2 cover screws HW

HW Construction

Material	SolarGuard® – Hot compression molded fiberglass reinforced polyester (thermoset)
Gasket	Poured polyurethane seamless gasket provides watertight, dust-tight environmental seal
Recessed Screws	No protruding surfaces
Stainless Steel Hardware	300 Series stainless used on all external hardware
Mounting Bosses	Panel mounting capability for fixed rear panel
Metal Inserts	All bosses utilize threaded brass inserts accepting 10-32 screws. Cover screws 10-24.
Soft Edge Design	Rounded edges, minimal protrusions or exposed pocket areas for assembly of dust and debris
Color	Available standard glacier grey (PMS 428C)

HW Modifications

Custom Colors	pg. 21-22
Silk Screening	pg. 21-22
EMI/RFI Shielding	pg. 21-22
Custom Window	pg. 21-22
Custom Cutouts/Holes	pg. 21-22

HW Industry Standards

NEMA 250, UL Listed **UL50, UL50e, UL508A**	File E64358 Type 1, 3, 3R, 3S, 4X, 12
CSA Std C22.2	File LR069014 Type 1, 3, 3R, 3S, 4X, 12
Temperature Range	(-76°F to +274°F) (-60°C to +134°C)
Flammability Rating	UL94-5V
Self Extinguishing	Non-halogenated, Non-flame propagating
Chemical Resistance	Full chemical resistance charts listed in appendix
NFPA No. 101 Flame Spread	Class A (1)
Outdoor Exposure UL746C	(f1) Rated

HW Accessories

PANELS	**Aluminum**	BP_AL	pg. 174-175
	Fiberglass	BP_FG	pg. 174-175
	Stainless Steel	BP_SS	pg. 174-175
	Carbon Steel	BP_CS	pg. 174-175
	Dead Front Panels		pg. 180-181
	Mounting Feet		pg. 192
ACCESSORIES	**Drain & Breather Vents**		pg. 185
	Hole Plugs		pg. 187
	Assorted Hubs and Cord Grips		pg. 188-189
	All Other Accessories		pg. 184-194

Opaque Cover

W **CONFIGURATION**
4 cover screws, lift off cover

W Construction

Material	SolarGuard® – Hot compression molded fiberglass reinforced polyester (thermoset)
Gasket	Poured polyurethane seamless gasket provides watertight, dust-tight environmental seal
Recessed Screws	No protruding surfaces
Stainless Steel Hardware	300 Series stainless used on all external hardware
Mounting Bosses	Panel mounting capability for fixed rear panel
Metal Inserts	All bosses utilize threaded brass inserts accepting 10-32 screws. Cover screws 10-24.
Soft Edge Design	Rounded edges, minimal protrusions or exposed pocket areas for assembly of dust and debris
Color	Available standard glacier grey (PMS 428C)

W Modifications

Custom Colors	pg. 21-22
Silk Screening	pg. 21-22
EMI/RFI Shielding	pg. 21-22
Custom Window	pg. 21-22
Custom Cutouts/Holes	pg. 21-22

W Industry Standards

NEMA 250, UL Listed **UL50, UL50e, UL508A**	File E64358 Type 1, 3, 3R, 3S, 4X, 12
CSA STD C22.2	File LR069014 Type 1, 3, 3R, 3S, 4X, 12
Temperature Range	(-76°F to +274°F) (-60°C to +134°C)
Flammability Rating	UL94-5V
Self Extinguishing	Non-halogenated, Non-flame propagating
Chemical Resistance	Full chemical resistance charts listed in appendix
NFPA No. 101 Flame Spread	Class A (1)
Outdoor Exposure UL746C	(f1) Rated

W Accessories

PANELS	**Aluminum**	BP_AL	pg. 174-175
	Fiberglass	BP_FG	pg. 174-175
	Stainless Steel	BP_SS	pg. 174-175
	Carbon Steel	BP_CS	pg. 174-175
	Dead Front Panels		pg. 180-181
	Mounting Feet		pg. 192
ACCESSORIES	**Drain & Breather Vents**		pg. 185
	Hole Plugs		pg. 187
	Assorted Hubs and Cord Grips		pg. 188-189
	All Other Accessories		pg. 184-194

Opaque Cover

CONFIGURATION
Hinged, twist latch HLL

HLL Construction

Material	SolarGuard® – Hot compression molded fiberglass reinforced polyester (thermoset)
Gasket	Poured polyurethane seamless gasket provides watertight, dust-tight environmental seal
Stainless Steel Hardware	300 Series stainless used on all external hardware
Mounting Bosses	Panel mounting capability for fixed rear panel
Metal Inserts	All bosses utilize threaded brass inserts accepting 10-32 screws
Soft Edge Design	Rounded edges, minimal protrusions or exposed pocket areas for assembly of dust and debris
Color	Available standard glacier grey (PMS 428C)

HLL Modifications

Custom Colors	pg. 21-22
Silk Screening	pg. 21-22
EMI/RFI Shielding	pg. 21-22
Custom Window	pg. 21-22
Custom Cutouts/Holes	pg. 21-22

HLL Industry Standards

NEMA 250, UL Listed **UL50, UL50e, UL508A**	File E64358 Type 1, 3, 3R, 3S, 4X, 12
CSA Std C22.2	File LR069014 Type 1, 3, 3R, 3S, 4X, 12
Temperature Range	(-76°F to +274°F) (-60°C to +134°C)
Flammability Rating	UL94-5V
Self Extinguishing	Non-halogenated, Non-flame propagating
Chemical Resistance	Full chemical resistance charts listed in appendix
NFPA No. 101 Flame Spread	Class A (1)
Outdoor Exposure UL746C	(f1) Rated

HLL Accessories

PANELS	**Aluminum**	BP_AL	pg. 174-175
	Fiberglass	BP_FG	pg. 174-175
	Stainless Steel	BP_SS	pg. 174-175
	Carbon Steel	BP_CS	pg. 174-175
	Dead Front Panels		pg. 180-181
	Mounting Feet		pg. 192
ACCESSORIES	**Drain & Breather Vents**		pg. 185
	Hole Plugs		pg. 187
	Assorted Hubs and Cord Grips		pg. 188-189
	All Other Accessories		pg. 184-194

Opaque Cover

HL **CONFIGURATION**
Hinged, through-the-door 1/4 turn latch

HL Construction

Material	SolarGuard® – Hot compression molded fiberglass reinforced polyester (thermoset)
Gasket	Poured polyurethane seamless gasket provides watertight, dust-tight environmental seal
Stainless Steel Hardware	300 Series stainless used on all external hardware
Mounting Bosses	Panel mounting capability for fixed rear panel
Metal Inserts	All bosses utilize threaded brass inserts accepting 10-32 screws
Soft Edge Design	Rounded edges, minimal protrusions or exposed pocket areas for assembly of dust and debris
Latch Material	Glass filled polyamide
Color	Available standard glacier grey (PMS 428C)

HL Modifications

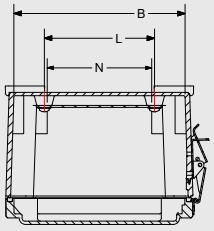
Custom Colors	pg. 21-22
Silk Screening	pg. 21-22
EMI/RFI Shielding	pg. 21-22
Custom Window	pg. 21-22
Custom Cutouts/Holes	pg. 21-22

HL Industry Standards

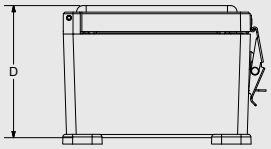
NEMA 250, UL Listed **UL50, UL50e, UL508A**	File E64358 Type 1, 3, 3R, 3S, 4X, 12
CSA Std C22.2	File LR069014 Type 1, 3, 3R, 3S, 4X, 12
Temperature Range	(-76°F to +274°F) (-60°C to +134°C)
Flammability Rating	UL94-5V
Self Extinguishing	Non-halogenated, Non-flame propagating
Chemical Resistance	Full chemical resistance charts listed in appendix
NFPA No. 101 Flame Spread	Class A (1)
Outdoor Exposure UL746C	(f1) Rated

HL Accessories

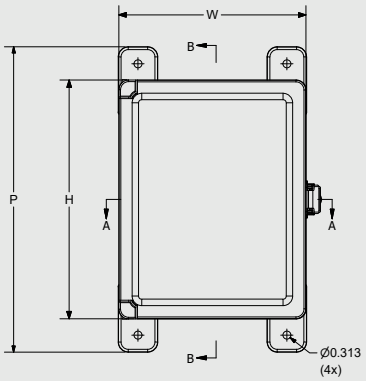
PANELS	**Aluminum**	BP_AL	pg. 174-175
	Fiberglass	BP_FG	pg. 174-175
	Stainless Steel	BP_SS	pg. 174-175
	Carbon Steel	BP_CS	pg. 174-175
	Dead Front Panels		pg. 180-181
	Mounting Feet		pg. 192
ACCESSORIES	**Drain & Breather Vents**		pg. 185
	Hole Plugs		pg. 187
	Assorted Hubs and Cord Grips		pg. 188-189
	All Other Accessories		pg. 184-194

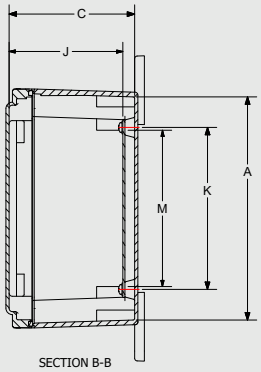


SECTION A-A

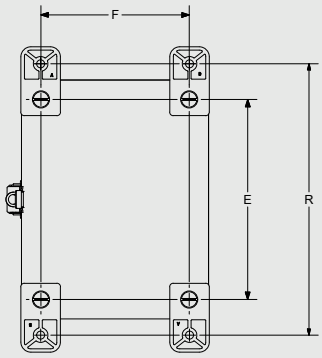


NOTES:
1. CATALOG DRAWING IS FOR REFERENCE ONLY
2. SEE ACTUAL PART DRAWING FOR SPECIFIC DESIGN
3. NOTE "J" DIMENSION IS WITH 0.080" THICK BACK PANEL INSTALLED
4. BACK PANEL IS SOLD SEPARATELY
5. MOUNTING FEET SHOWN AS INSTALLED - FOR REFERENCE ONLY
6. MOUNTING FEET ARE SOLD SEPARATELY





SECTION B-B



SCREW SIZES & TORQUE VALUES

PRODUCT SIZES	BACK PANEL SCREW SIZE	BACK PANEL RECOMMENDED TORQUE	COVER SCREW SIZE	COVER SCREW RECOMMENDED TORQUE	MOUNTING FOOT SCREW SIZE	MOUNTING FOOT SCREW RECOMMENDED TORQUE	RECOMMENDED MOUNTING FLANGE TORQUE
All Sizes	#10-32 x 3/8	16 - 20 in-lbs	#10-24 x 1 All W Sizes	20 - 24 in-lbs	5/16-18 x 1/2 All Sizes	10 - 14 in-lbs	45 in-lbs max

Classic Series – Opaque Cover

CATALOG NUMBER	OVERALL H X W X D	INSIDE A X B X C	MOUNTING E X F	J	K	L	M	N	P	OPT MTG FEET R X F	SHIP WEIGHT	PANEL NUMBER
CL707HPL CL707HW CL707W CL707HL	7.22 x 7.22 x 5.09 (183 x 183 x 129)	6.66 x 6.66 x 4.84 (169 x 169 x 123)	5.71 x 5.71 (145 x 145)	4.39 (111)	4.25 (108)	4.25 (108)	4.04 (103)	4.04 (103)	9.87 (251)	8.47 X 5.71 (215 x 145)	3.5 lbs.	BP66*
CL907HPL CL907HW CL907W CL907HL	9.22 x 7.22 x 5.09 (234 x 183 x 129)	8.59 x 6.59 x 4.84 (218 x 167 x 123)	7.71 x 5.71 (196 x 145)	4.39 (111)	6.25 (159)	4.25 (108)	6.04 (154)	4.04 (103)	11.78 (299)	10.47 X 5.71 (266 x 145)	4.2 lbs.	BP86*
CL1109HPL CL1109HW CL1109W CL1109HL	11.22 x 9.22 x 6.09 (285 x 235 x 155)	10.59 x 8.59 x 5.84 (269 x 218 x 148)	9.71 x 7.71 (247 x 196)	5.39 (137)	8.25 (210)	6.25 (159)	8.04 (204)	6.04 (154)	13.79 (350)	12.48 X 7.71 (317 x 196)	5.9 lbs.	BP108*
CL1311HPL CL1311HW CL1311W CL1311HLL CL1311HL	13.22 x 11.22 x 6.59 (336 x 285 x 167)	12.61 x 10.61 x 6.34 (320 x 269 x 161)	11.71 x 9.71 (298 x 247)	5.89 (150)	10.25 (260)	8.25 (210)	10.04 (255)	8.04 (204)	15.78 (401)	14.47 X 9.71 (368 x 247)	7.6 lbs.	BP1210*
CL1513HPL CL1513HW CL1513W CL1513HLL CL1513HL	15.22 x 13.22 x 7.09 (387 x 336 x 180)	14.60 x 12.60 x 6.84 (371 x 320 x 174)	13.71 x 11.71 (348 x 298)	6.39 (162)	12.25 (311)	10.25 (260)	12.04 (306)	10.04 (255)	17.78 (451)	16.47 X 11.71 (418 x 297)	11.4 lbs.	BP1412*

Note: Hinged Short Side available; consult factory for details. All measures are in inches, items in parentheses are in millimeters.

*Panel sold separately

Window Cover

HPL **CONFIGURATION**
Hinged, padlock latch

HPL Construction

Material	SolarGuard® – Hot compression molded fiberglass reinforced polyester (thermoset)
Gasket	Poured polyurethane seamless gasket provides watertight, dust-tight environmental seal
Stainless Steel Hardware	300 Series stainless used on all hardware
Mounting Bosses	Panel mounting capability for fixed rear panel
Metal Inserts	All bosses utilize threaded brass inserts accepting 10-32 screws
Soft Edge Design	Rounded edges, minimal protrusions or exposed pocket areas for assembly of dust and debris
Bonded Window	Precision routed flush bonded Super Abrasion Resistant acrylic material for maximum visibility
Color	Available standard glacier grey (PMS 428C)

HPL Modifications

Custom Colors	pg. 21-22
Silk Screening	pg. 21-22
EMI/RFI Shielding	pg. 21-22
Custom Window	pg. 21-22
Custom Cutouts/Holes	pg. 21-22

HPL Industry Standards

NEMA 250, UL Listed UL50, UL50e, UL508A	File E64358 Type 1, 3, 3R, 3S, 4X, 12
CSA Std C22.2	File LR069014 Type 1, 3, 3R, 3S, 4X, 12
Temperature Range	(-76° F to +274°F) (-60°C to +134°C)
Flammability Rating	UL94-5V
Window Temperature Range	(-26°F to +170°F) (-32°C to +76°C)
Self Extinguishing	Non-halogenated, Non-flame propagating
Chemical Resistance	Full chemical resistance charts listed in appendix
NFPA No. 101 Flame Spread	Class A (1)
Outdoor Exposure UL746C	(f1) Rated

HPL Accessories

PANELS	**Aluminum**	BP_AL	pg. 174-175
PANELS	**Fiberglass**	BP_FG	pg. 174-175
PANELS	**Stainless Steel**	BP_SS	pg. 174-175
PANELS	**Carbon Steel**	BP_CS	pg. 174-175
PANELS	**Dead Front Panels**		pg. 180-181
	Mounting Feet		pg. 192
ACCESSORIES	**Drain & Breather Vents**		pg. 185
ACCESSORIES	**Hole Plugs**		pg. 187
ACCESSORIES	**Assorted Hubs and Cord Grips**		pg. 188-189
ACCESSORIES	**All Other Accessories**		pg. 184-194

Window Cover

CONFIGURATION
Hinged, 2 cover screws HW

HW Construction

Material	SolarGuard® – Hot compression molded fiberglass reinforced polyester (thermoset)
Gasket	Poured polyurethane seamless gasket provides watertight, dust-tight environmental seal
Recessed Screws	No protruding surfaces
Stainless Steel Hardware	300 Series stainless used on all hardware
Mounting Bosses	Panel mounting capability for fixed rear panel
Metal Inserts	All bosses utilize threaded brass inserts accepting 10-32 screws. Cover screws 10-24.
Soft Edge Design	Rounded edges, minimal protrusions or exposed pocket areas for assembly of dust and debris
Bonded Window	Precision routed flush bonded Super Abrasion Resistant acrylic material for maximum visibility
Color	Available standard glacier grey (PMS 428C)

HW Modifications

Custom Colors	pg. 21-22
Silk Screening	pg. 21-22
EMI/RFI Shielding	pg. 21-22
Custom Window	pg. 21-22
Custom Cutouts/Holes	pg. 21-22

HW Industry Standards

NEMA 250, UL Listed UL50, UL50e, UL508A	File E64358 Type 1, 3, 3R, 3S, 4X, 12
CSA Std C22.2	File LR069014 Type 1, 3, 3R, 3S, 4X, 12
Temperature Range	(-76° F to +274° F) (-60° C to +134° C)
Flammability Rating	UL94-5V
Window Temperature Range	(-26° F to +170° F) (-32° C to +76° C)
Self Extinguishing	Non-halogenated, Non-flame propagating
Chemical Resistance	Full chemical resistance charts listed in appendix
NFPA No. 101 Flame Spread	Class A (1)
Outdoor Exposure UL746C	(f1) Rated

HW Accessories

PANELS	**Aluminum**	BP_AL	pg. 174-175
	Fiberglass	BP_FG	pg. 174-175
	Stainless Steel	BP_SS	pg. 174-175
	Carbon Steel	BP_CS	pg. 174-175
	Dead Front Panels		pg. 180-181
	Mounting Feet		pg. 192
ACCESSORIES	**Drain & Breather Vents**		pg. 185
	Hole Plugs		pg. 187
	Assorted Hubs and Cord Grips		pg. 188-189
	All Other Accessories		pg. 184-194

Window Cover

W **CONFIGURATION**
4 cover screws, lift off cover

W Construction

Material	SolarGuard® – Hot compression molded fiberglass reinforced polyester (thermoset)
Gasket	Poured polyurethane seamless gasket provides watertight, dust-tight environmental seal
Recessed Screws	No protruding surfaces
Stainless Steel Hardware	300 Series stainless used on all hardware
Mounting Bosses	Panel mounting capability for fixed rear panel
Metal Inserts	All bosses utilize threaded brass inserts accepting 10-32 screws; cover screws 10-24
Soft Edge Design	Rounded edges, minimal protrusions or exposed pocket areas for assembly of dust and debris
Bonded Window	Precision routed flush bonded Super Abrasion Resistant acrylic material for maximum visibility
Color	Available standard glacier grey (PMS 428C)

W Modifications

Custom Colors	pg. 21-22
Silk Screening	pg. 21-22
EMI/RFI Shielding	pg. 21-22
Custom Window	pg. 21-22
Custom Cutouts/Holes	pg. 21-22

W Industry Standards

NEMA 250, UL Listed UL50, UL50e, UL508A	File E64358 Type 1, 3, 3R, 3S, 4X, 12
CSA Std C22.2	File LR069014 Type 1, 3, 3R, 3S, 4X, 12
Temperature Range	(-76° F to +274°F) (-60°C to +134°C)
Flammability Rating	UL94-5V
Window Temperature Range	(-26°F to +170°F) (-32°C to +76°C)
Self Extinguishing	Non-halogenated, Non-flame propagating
Chemical Resistance	Full chemical resistance charts listed in appendix
NFPA No. 101 Flame Spread	Class A (1)
Outdoor Exposure UL746C	(f1) Rated

W Accessories

PANELS	**Aluminum**	BP_AL	pg. 174-175
	Fiberglass	BP_FG	pg. 174-175
	Stainless Steel	BP_SS	pg. 174-175
	Carbon Steel	BP_CS	pg. 174-175
	Dead Front Panels		pg. 180-181
	Mounting Feet		pg. 192
ACCESSORIES	**Drain & Breather Vents**		pg. 185
	Hole Plugs		pg. 187
	Assorted Hubs and Cord Grips		pg. 188-189
	All Other Accessories		pg. 184-194

Window Cover

CONFIGURATION
Hinged, twist latch HLL

HLL Construction

Material	SolarGuard® – Hot compression molded fiberglass reinforced polyester (thermoset)
Gasket	Poured polyurethane seamless gasket provides watertight, dust-tight environmental seal
Stainless Steel Hardware	300 Series stainless used on all hardware
Mounting Bosses	Panel mounting capability for fixed rear panel
Metal Inserts	All bosses utilize threaded brass inserts accepting 10-32 screws
Soft Edge Design	Rounded edges, minimal protrusions or exposed pocket areas for assembly of dust and debris
Bonded Window	Precision routed flush bonded Super Abrasion Resistant acrylic material for maximum visibility
Color	Available standard glacier grey (PMS 428C)

HLL Modifications

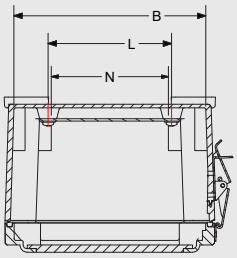
Custom Colors	pg. 21-22
Silk Screening	pg. 21-22
EMI/RFI Shielding	pg. 21-22
Custom Window	pg. 21-22
Custom Cutouts/Holes	pg. 21-22

HLL Industry Standards

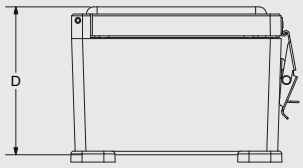
NEMA 250, UL Listed UL50, UL50e, UL508A	File E64358 Type 1, 3, 3R, 3S, 4X, 12
CSA Std C22.2	File LR069014 Type 1, 3, 3R, 3S, 4X, 12
Temperature Range	(-76° F to +274° F) (-60° C to +134° C)
Flammability Rating	UL94-5V
Window Temperature Range	(-26° F to +170° F) (-32° C to +76° C)
Self Extinguishing	Non-halogenated, Non-flame propagating
Chemical Resistance	Full chemical resistance charts listed in appendix
NFPA No. 101 Flame Spread	Class A (1)
Outdoor Exposure UL746C	(f1) Rated

HLL Accessories

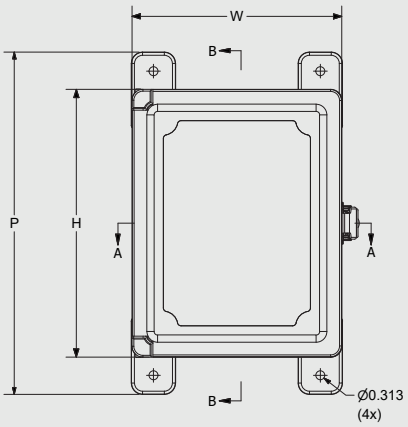
PANELS	**Aluminum**	BP_AL	pg. 174-175
	Fiberglass	BP_FG	pg. 174-175
	Stainless Steel	BP_SS	pg. 174-175
	Carbon Steel	BP_CS	pg. 174-175
	Dead Front Panels		pg. 180-181
	Mounting Feet		pg. 192
ACCESSORIES	**Drain & Breather Vents**		pg. 185
	Hole Plugs		pg. 187
	Assorted Hubs and Cord Grips		pg. 188-189
	All Other Accessories		pg. 184-194

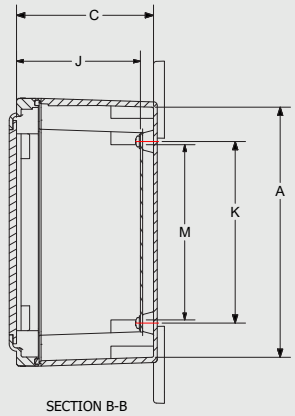


SECTION A-A

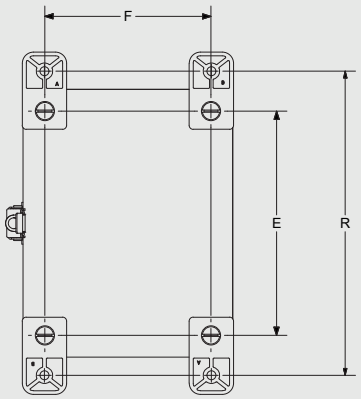


NOTES:
1. CATALOG DRAWING IS FOR REFERENCE ONLY
2. SEE ACTUAL PART DRAWING FOR SPECIFIC DESIGN
3. NOTE J DIMENSION IS WITH 0.080" THICK BACK PANEL INSTALLED
4. BACK PANEL IS SOLD SEPARATELY
5. MOUNTING FEET SHOWN AS INSTALLED - FOR REFERENCE ONLY
6. MOUNTING FEET ARE SOLD SEPARATELY





SECTION B-B



SCREW SIZES & TORQUE VALUES

PRODUCT SIZES	BACK PANEL SCREW SIZE	BACK PANEL RECOMMENDED TORQUE	COVER SCREW SIZE	COVER SCREW RECOMMENDED TORQUE	MOUNTING FOOT SCREW SIZE	MOUNTING FOOT SCREW RECOMMENDED TORQUE	RECOMMENDED MOUNTING FLANGE TORQUE
All Sizes	#10-32 x 3/8	16 - 20 in-lbs	#10-24 x 1 All W Sizes	20 - 24 in-lbs	5/16-18 x 1/2 All Sizes	10 - 14 in-lbs	45 in-lbs max

Classic Series – Window Cover

CATALOG NUMBER	OVERALL H X W X D	INSIDE A X B X C	WINDOW AREA (MAXIMUM)	MOUNTING E X F	J	K	L	M	N	P	OPT MTG FEET F X R	SHIP WEIGHT	PANEL NUMBER
CLW707HPL CLW707HW	7.22 x 7.22 x 5.09 (183 x 183 x 129)	6.66 x 6.66 x 4.84 (169 x 169 x 123)	5.06 x 5.06 (129 x 129)	5.71 x 5.71 (145 x 145)	4.35 (110)	4.25 (108)	4.25 (108)	4.04 (103)	4.04 (103)	9.87 (251)	8.47 X 5.71 (215 x 145)	4 lbs.	BP66*
CLW907HPL CLW907HW	9.22 x 7.22 x 5.09 (234 x 182 x 129)	8.59 x 6.59 x 4.84 (218 x 167 x 123)	7.06 x 5.06 (179 x 129)	7.71 x 5.71 (196 x 145)	4.35 (110)	6.25 (159)	4.25 (108)	6.04 (154)	4.04 (103)	11.78 (299)	10.47 X 5.71 (266 x 145)	4.3 lbs.	BP86*
CLW1109HPL CLW1109HW	11.22 x 9.22 x 6.09 (285 x 234 x 155)	10.59 x 8.59 x 5.84 (269 x 218 x 148)	9.06 x 7.06 (230 x 179)	9.71 x 7.71 (247 x 196)	5.34 (136)	8.25 (210)	6.25 (159)	8.04 (204)	6.04 (154)	13.79 (350)	12.48 X 7.71 (317 x 196)	6 lbs.	BP108*
CLW1311HPL CLW1311HW CLW1311HLL	13.22 x 11.22 x 6.59 (336 x 285 x 167)	12.61 x 10.61 x 6.34 (320 x 269 x 161)	11.06 x 9.06 (281 x 230)	11.71 x 9.71 (298 x 247)	5.84 (148)	10.25 (260)	8.25 (210)	10.04 (255)	8.04 (204)	15.78 (401)	14.47 X 9.71 (368 x 247)	7.8 lbs.	BP1210*
CLW1513HPL CLW1513HW CLW1513HLL	15.22 x 13.22 x 7.09 (387 x 336 x 180)	14.60 x 12.60 x 6.84 (371 x 320 x 174)	13.06 x 11.06 (332 x 281)	13.71 x 11.71 (348 x 298)	6.47 (164)	12.25 (311)	10.25 (260)	12.04 (306)	10.04 (255)	17.78 (451)	16.47 X 11.71 (418 x 297)	11.6 lbs.	BP1412*

Note: Hinge Short Side available, consult factory for details. All measures are in inches, items in parentheses are in millimeters.

***Panel sold separately*

Solar

"Stahlin non-metallic enclosures have a strong reputation in the solar industry, with excellent performance and time-tested designs. We feel the enclosure truly compliments our tracking line. The final choice of the enclosure for the actuator was made easy by the attention given to the project by Stahlin's professionals. They were able to meet both our technical needs, as well as customize their product to our specifications."

– **Dave,** *Global Director of Lean Manufacturing*
Global Leader in Actuating Systems

Read more at: **stahlin.com/industries**

N Series – Wall Mount

N Series – Wall Mount

Stahlin's **N Series** enclosures are designed to accommodate electrical, electronic, instrumentation and mechanical controls indoors and outdoors where corrosion resistant watertight enclosures are needed to provide protection against windblown dust and rain, splashing and hose directed water. The "N" designation reflects a NEMA range series of large capacity enclosures.

With the ample working space involved, this wall mount configuration, enclosure style will also accommodate combination hydraulic or pneumatic controls along with the supporting electrical control. Fiberglass reinforced polyester supports a very high temperature range and corrosion resistance when used in oil field, mining, oil platform, water/waste water and general processing controls. Yet, the pleasing cosmetic construction is ideally suited for ordinary indoor or outdoor industrial control mounting.

Product Configurations

OPAQUE COVER

HWT
TYPE 4X SS HINGED, LATCHED DOWN COVER

FHLWT
TYPE 4X FIBERGLASS HINGED, THROUGH THE DOOR LATCHES

WT
TYPE 4X LATCHED DOWN COVER, LIFT OFF COVER

RT
TYPE 3R SS HINGED, LATCHED DOWN COVER

FHLRT
TYPE 3R FIBERGLASS HINGED, THROUGH-THE-DOOR LATCHES

12
TYPE 12 STAINLESS STEEL HINGED, LATCH DOWN COVER

BONDED WINDOW

HWT
TYPE 4X STAINLESS STEEL HINGED, LATCHED DOWN COVER

Attributes

- Available in 2 cover options:
  1. Opaque cover
  2. Flush bonded window
- Fiberglass reinforced polyester material
- Memory retaining polyurethane gasket
- 300 series stainless steel hardware
- Integral mounting feet
- Molded in panel mounting inserts or studs
- High temperature, flame-retardant, non corrosive, environmental designs
- Padlockable

Industry Standards

NEMA 250, UL Listed UL50, UL50e, UL508A	File E64358 Type 1, 3, 3R, 4X, 12 as designated
CSA Std C22.2	File LR069014 Type 1, 3, 3R, 4X, 12 as designated
IEC 60529	File E362920 IP66
UL1741	File E333478 WT, HWT, FHLWT
Temperature Range	(-76°F to +274°F) (-60°C to +134°C)
Temperature Range Window	(-26°F to +170°F) (-32°C to +76°C)
Flammability Rating	UL94-5V
Impact Rating	IK10
Self Extinguishing	Non-halogenated, non-flame propagating
Chemical Resistance	Full chemical resistance charts listed in appendix
NFPA No. 101 Flame Spread	Class A (1)
Outdoor UV Exposure	(f1) Rated
Color	Available standard glacier grey (PMS 428C)

Opaque Cover

Type 4X

CONFIGURATION
Stainless steel hinged, latched down cover

HWT Construction

Material	SolarGuard® – Hot compression molded fiberglass reinforced polyester, hand layup FRP
Gasket	Poured polyurethane seamless gasket provides watertight, dust-tight environmental seal
Stainless Steel Hardware	300 Series stainless used on all hardware
Mounting Bosses	Panel mounting capability for fixed rear panel
Metal Inserts	All bosses utilize threaded brass inserts accepting 3/8"-16 screws
Soft Edge Design	Rounded edges, minimal protrusions or exposed pocket areas for assembly of dust and debris
Color	Available standard glacier grey (PMS 428C)

HWT Modifications

Custom Colors	pg. 21-22
Silk Screening	pg. 21-22
EMI/RFI Shielding	pg. 21-22
Custom Window	pg. 21-22
Custom Cutouts/Holes	pg. 21-22

HWT Industry Standards

NEMA 250, UL Listed UL50, UL50e, UL508A	File E64358 Type 1, 3, 3R, 4X, 12
CSA Std C22.2	File LR069014 Type 1, 3, 3R, 4X, 12
IEC 60529	File E362920 IP66
UL 1741	File E333478
Temperature Range	(-76°F to +274°F) (-60°C to +134°C)
Flammability Rating	UL94-5V
Impact Rating	IK 10
Self Extinguishing	Non-halogenated, non-flame propagating
Chemical Resistance	Full chemical resistance charts listed in appendix
NFPA No. 101 Flame Spread	Class A (1)
Outdoor Exposure UL746C	(f1) Rated

HWT Accessories

PANELS	**Aluminum**	BP_AL	pg. 178
	Fiberglass	BP_FG	pg. 178
	Stainless Steel	BP_SS	pg. 178
	Carbon Steel	BP_CS	pg. 178
	Dead Front Panels		pg. 180-181
ACCESSORIES	**Drain & Breather Vents**		pg. 185
	Hole Plugs		pg. 187
	Assorted Hubs and Cord Grips		pg. 188-189
	All Other Accessories		pg. 184-194

Opaque Cover

CONFIGURATION
Fiberglass hinged, latched down cover FHLWT

FHLWT Construction

Material	SolarGuard® – Hot compression molded fiberglass reinforced polyester, hand layup FRP
Gasket	Poured polyurethane seamless gasket provides watertight, dust-tight environmental seal
Non-Metallic Hardware	Glass filled PBT hinge, nylon quarter turn latches
Mounting Bosses	Panel mounting capability for fixed rear panel
Metal Inserts	All bosses utilize threaded brass inserts accepting 3/8"-16 screws
Soft Edge Design	Rounded edges, minimal protrusions or exposed pocket areas for assembly of dust and debris
Hinge Material	Glass filled Polybutylene Terephthalate (PBT)
Color	Available standard glacier grey (PMS 428C)

FHLWT Modifications

Custom Colors	pg. 21-22
Silk Screening	pg. 21-22
EMI/RFI Shielding	pg. 21-22
Custom Window	pg. 21-22
Custom Cutouts/Holes	pg. 21-22

FHLWT Industry Standards

NEMA 250, UL Listed **UL50, UL50e, UL508A**	File E64358 Type 1, 3, 3R, 4X, 12
CSA Std C22.2	File LR069014 Type 1, 3, 3R, 4X, 12
IEC 60529	File E362920 IP66
UL 1741	File E333478
Temperature Range	(-76°F to +274°F) (-60°C to +134°C)
Flammability Rating	UL94-5V
Impact Rating	IK 10
Self Extinguishing	Non-halogenated, non-flame propagating
Chemical Resistance	Full chemical resistance charts listed in appendix
NFPA No. 101 Flame Spread	Class A (1)
Outdoor Exposure UL746C	(f1) Rated

FHLWT Accessories

PANELS	**Aluminum**	BP_AL	pg. 178
	Fiberglass	BP_FG	pg. 178
	Stainless Steel	BP_SS	pg. 178
	Carbon Steel	BP_CS	pg. 178
	Dead Front Panels		pg. 180-181
ACCESSORIES	**Drain & Breather Vents**		pg. 185
	Hole Plugs		pg. 187
	Assorted Hubs and Cord Grips		pg. 188-189
	All Other Accessories		pg. 184-194

Opaque Cover

Type 4X

CONFIGURATION
Latched down cover, lift off cover

WT Construction

Material	SolarGuard® – Hot compression molded fiberglass reinforced polyester, hand layup FRP
Gasket	Poured polyurethane seamless gasket provides watertight, dust-tight environmental seal
Stainless Steel Hardware	300 Series stainless used on all hardware
Mounting Bosses	Panel mounting capability for fixed rear panel
Metal Inserts	All bosses utilize threaded brass inserts accepting 3/8"-16 screws
Soft Edge Design	Rounded edges, minimal protrusions or exposed pocket areas for assembly of dust and debris
Color	Available standard glacier grey (PMS 428C)

WT Modifications

Custom Colors	pg. 21-22
Silk Screening	pg. 21-22
EMI/RFI Shielding	pg. 21-22
Custom Window	pg. 21-22
Custom Cutouts/Holes	pg. 21-22

WT Industry Standards

NEMA 250, UL Listed **UL50, UL50e, UL508A**	File E64358 Type 1, 3, 3R, 4X, 12
CSA Std C22.2	File LR069014 Type 1, 3, 3R, 4X, 12
IEC 60529	File E362920 IP66
UL 1741	File E333478
Temperature Range	(-76°F to +274°F) (-60°C to +134°C)
Flammability Rating	UL94-5V
Impact Rating	IK 10
Self Extinguishing	Non-halogenated, non-flame propagating
Chemical Resistance	Full chemical resistance charts listed in appendix
NFPA No. 101 Flame Spread	Class A (1)
Outdoor Exposure UL746C	(f1) Rated

WT Accessories

PANELS	**Aluminum**	BP_AL	pg. 178
	Fiberglass	BP_FG	pg. 178
	Stainless Steel	BP_SS	pg. 178
	Carbon Steel	BP_CS	pg. 178
	Dead Front Panels		pg. 180-181
ACCESSORIES	**Drain & Breather Vents**		pg. 185
	Hole Plugs		pg. 187
	Assorted Hubs and Cord Grips		pg. 188-189
	All Other Accessories		pg. 184-194

Opaque Cover

Type 3R

CONFIGURATION
Hinged, latch down cover RT

RT Construction

Material	SolarGuard® – Hot compression molded fiberglass reinforced polyester, hand layup FRP
Rain Shield	Protection against incidental water ingress
Gasket	Poured polyurethane seamless gasket provides watertight, dust-tight environmental seal
Stainless Steel Hardware	300 Series stainless used on all hardware
Mounting Bosses	Panel mounting capability for fixed rear panel
Metal Inserts	All bosses utilize threaded brass inserts accepting 3/8"-16 screws
Soft Edge Design	Rounded edges, minimal protrusions or exposed pocket areas for assembly of dust and debris
Color	Available standard glacier grey (PMS 428C)

RT Modifications

Custom Colors	pg. 21-22
Silk Screening	pg. 21-22
EMI/RFI Shielding	pg. 21-22
Custom Window	pg. 21-22
Custom Cutouts/Holes	pg. 21-22

RT Industry Standards

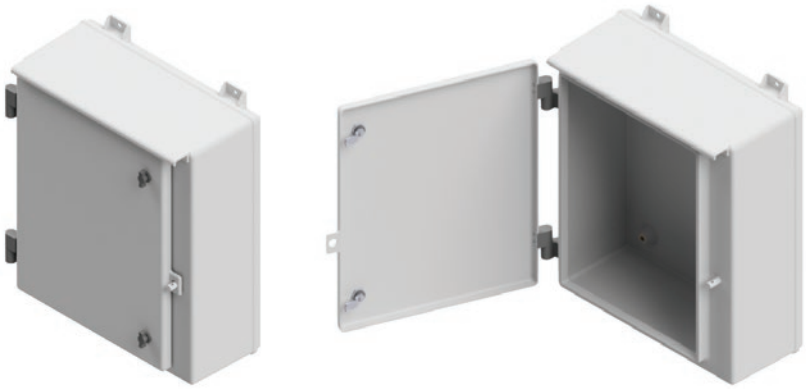
NEMA 250, UL Listed UL50, UL50e, UL508A	File E64358 Type 1, 3R
CSA Std C22.2	File LR069014; Type 1, 3R
IEC 60529	File E362920 IP66
UL 1741	File E333478
Temperature Range	(-76°F to +274°F) (-60°C to +134°C)
Temperature Range Window	(-26°F to +170°F) (-32°C to +76°C)
Flammability Rating	UL94-5V
Impact Rating	IK 10
Self Extinguishing	Non-halogenated, non-flame propagating
Chemical Resistance	Full chemical resistance charts listed in appendix
NFPA No. 101 Flame Spread	Class A (1)
Outdoor Exposure UL746C	(f1) Rated

RT Accessories

PANELS	**Aluminum**	BP_AL	pg. 178
	Fiberglass	BP_FG	pg. 178
	Stainless Steel	BP_SS	pg. 178
	Carbon Steel	BP_CS	pg. 178
	Dead Front Panels		pg. 180-181
ACCESSORIES	**Drain & Breather Vents**		pg. 185
	Hole Plugs		pg. 187
	Assorted Hubs and Cord Grips		pg. 188-189
	All Other Accessories		pg. 184-194

Opaque Cover

Type 3R



CONFIGURATION
Fiberglass hinged, through-the-door latches

FHLRT Construction

Material	SolarGuard® – Hot compression molded fiberglass reinforced polyester, hand layup FRP
Rain Shield	Protection against incidental water ingress
Gasket	Poured polyurethane seamless gasket provides watertight, dust-tight environmental seal
Non-Metallic Hardware	Glass filled PBT hinge, nylon quarter turn latch
Mounting Bosses	Panel mounting capability for fixed rear panel
Metal Inserts	All bosses utilize threaded brass inserts accepting 3/8"-16 screws
Soft Edge Design	Rounded edges, minimal protrusions or exposed pocket areas for assembly of dust and debris
Hinge Material	Glass filled Polybutylene Terephthalate (PBT)
Color	Available standard glacier grey (PMS 428C)

FHLRT Modifications

Custom Colors	pg. 21-22
Silk Screening	pg. 21-22
EMI/RFI Shielding	pg. 21-22
Custom Window	pg. 21-22
Custom Cutouts/Holes	pg. 21-22

FHLRT Industry Standards

NEMA 250, UL Listed **UL50, UL50e, UL508A**	File E64358 Type 1, 3R
CSA Std C22.2	File LR069014; Type 1, 3R
IEC 60529	File E362920 IP66
UL 1741	File E333478
Temperature Range	(-76°F to +274°F) (-60°C to +134°C)
Temperature Range Window	(-26°F to +170°F) (-32°C to +76°C)
Flammability Rating	UL94-5V
Impact Rating	IK 10
Self Extinguishing	Non-halogenated, non-flame propagating
Chemical Resistance	Full chemical resistance charts listed in appendix
NFPA No. 101 Flame Spread	Class A (1)
Outdoor Exposure UL746C	(f1) Rated

FHLRT Accessories

PANELS	**Aluminum**	BP_AL	pg. 178
	Fiberglass	BP_FG	pg. 178
	Stainless Steel	BP_SS	pg. 178
	Carbon Steel	BP_CS	pg. 178
	Dead Front Panels		pg. 180-181
ACCESSORIES	**Drain & Breather Vents**		pg. 185
	Hole Plugs		pg. 187
	Assorted Hubs and Cord Grips		pg. 188-189
	All Other Accessories		pg. 184-194

Opaque Cover

Type 12

CONFIGURATION 12
Stainless steel, hinged, latch down cover

12 Construction

Material	SolarGuard® – Hot compression molded fiberglass reinforced polyester, hand layup FRP
Gasket	Poured polyurethane seamless gasket provides watertight, dust-tight environmental seal
Stainless Steel Hardware	300 Series stainless used on all hardware
Mounting Bosses	Panel mounting capability for fixed rear panel
Metal Inserts	All bosses utilize threaded brass inserts accepting 3/8"-16 screws
Soft Edge Design	Rounded edges, minimal protrusions or exposed pocket areas for assembly of dust and debris
Color	Available standard glacier grey (PMS 428C)

12 Modifications

Custom Colors	pg. 21-22
Silk Screening	pg. 21-22
EMI/RFI Shielding	pg. 21-22
Custom Window	pg. 21-22
Custom Cutouts/Holes	pg. 21-22

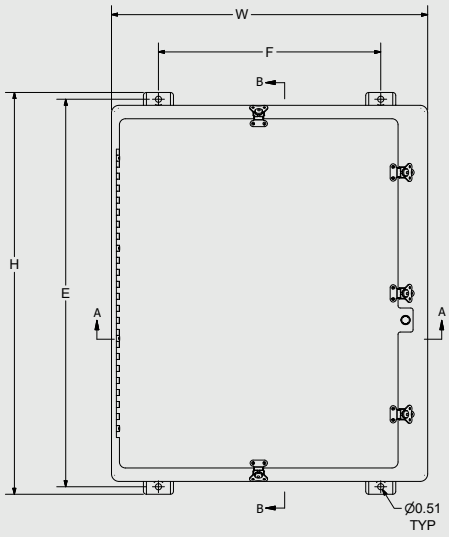
12 Industry Standards

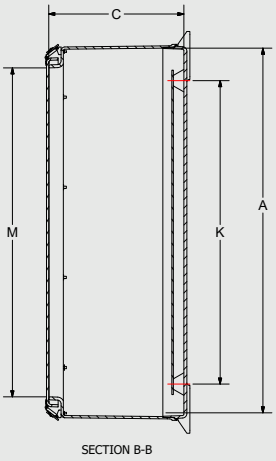
NEMA 250, UL Listed **UL50, UL50e, UL508A**	File E64358 Type 1, 12
CSA Std C22.2	File LR069014 Type 1, 12
IEC 60529	File E362920 IP66
UL 1741	File E333478
Temperature Range	(-76°F to +274°F) (-60°C to +134°C)
Flammability Rating	UL94-5V
Impact Rating	IK 10
Self Extinguishing	Non-halogenated, non-flame propagating
Chemical Resistance	Full chemical resistance charts listed in appendix
NFPA No. 101 Flame Spread	Class A (1)
Outdoor Exposure UL746C	(f1) Rated

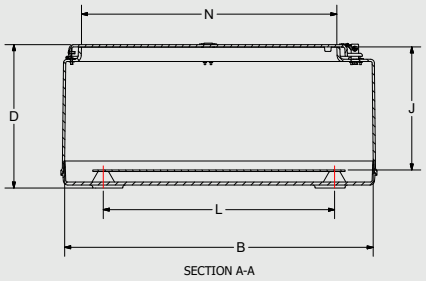
12 Accessories

PANELS	**Aluminum**	BP_AL	pg. 178
	Fiberglass	BP_FG	pg. 178
	Stainless Steel	BP_SS	pg. 178
	Carbon Steel	BP_CS	pg. 178
	Dead Front Panels		pg. 180-181
ACCESSORIES	**Drain & Breather Vents**		pg. 185
	Hole Plugs		pg. 187
	Assorted Hubs and Cord Grips		pg. 188-189
	All Other Accessories		pg. 184-194

N Series – Wall Mount







NOTES:
1. CATALOG DRAWING IS FOR REFERENCE ONLY
2. SEE ACTUAL PART DRAWING FOR SPECIFIC DESIGN
3. DIMENSION "J" IS WITH 0.105" THICK BACK PANEL INSTALLED
4. BACK PANEL SOLD SEPARATELY

SCREW SIZES & TORQUE VALUES

PRODUCT SIZES	BACK PANEL SCREW SIZE	BACK PANEL RECOMMENDED TORQUE	COVER SCREW SIZE	RECOMMENDED MOUNTING FLANGE TORQUE
N1610 up to N4836	#3/8-16 x 1/2 Hex Bolt	28 - 32 in-lbs	N/A	80 in-lbs max
All made to order	#3/8-16 Stud	28 - 32 in-lbs	N/A	80 in-lbs max

N Series – Opaque Cover

CATALOG NUMBER	OVERALL H X W X D	INSIDE A X B X C	MOUNTING E X F	J	K	L	ENCLOSURE OPENING M X N	NO. OF LATCHES	SHIP WEIGHT	PANEL NUMBER
N16107HWT N16107FHLWT	18.75 x 10.96 x 9.03 (476 x 278 x 229)	15.92 x 10.27 x 8.53 (404 x 261 x 217)	17.50 x 7.00 (444 x 178)	7.8 (198)	12 (305)	7.5 (191)	13.14 x 6.00 (334 x 152)	2	10.7 lbs.	BP1610**
N20166HWT N20166FHLWT	22.75 x 16.87 x 7.77 (578 x 429 x 197)	19.70 x 16.04 x 7.24 (500 x 407 x 184)	21.50 x 10.12 (546 x 257)	6.26 (159)	15.25 (387)	11.25 (286)	16.75 x 12.19 (425 x 310)	2	17.6 lbs.	BP2016**
N20168HWT N20168FHLWT N20168RT N20168FHLRT	22.75 x 16.87 x 10.27 (578 x 429 x 261)	19.70 x 16.04 x 9.24 (500 x 407 x 235)	21.50 x 10.12 (546 x 257)	8.26 (210)	15.25 (387)	11.25 (286)	16.75 x 12.19 (425 x 310)	2	19.7 lbs.	BP2016**
N201610HWT N201610RT	22.75 x 16.87 x 12.27 (578 x 429 x 312)	19.70 x 16.04 x 11.24 (500 x 407 x 286)	21.50 x 10.12 (546 x 257)	10.26 (261)	15.25 (387)	11.25 (286)	16.75 x 12.19 (425 x 310)	2	23 lbs.	BP2016**
N201612HWT N201612RT	22.75 x 16.87 x 14.27 (578 x 429 x 362)	19.70 x 16.04 x 13.24 (500 x 407 x 336)	21.50 x 10.12 (546 x 257)	12.26 (312)	15.25 (387)	11.25 (286)	16.75 x 12.19 (425 x 310)	2	23.5 lbs.	BP2016**
N201616HWT*	22.75 x 16.87 x 17.52 (578 x 429 x 445)	19.70 x 16.04 x 16.99 (500 x 407 x 432)	21.50 x 10.12 (546 x 257)	16.01 (407)	15.25 (387)	11.25 (286)	16.75 x 12.19 (425 x 310)	2	25 lbs.	BP2016**
N20208HWT* N20208*	23.50 x 20.50 x 9.69 (597 x 521 x 246)	20.25 x 20.25 x 8.88 (514 x 514 x 225)	22.25 x 14.50 (565 x 368)	7.88 (200)	15.25 (387)	15.25 (387)	17.00 x 16.00 (432 x 406)	2	26 lbs.	BP2020**
N24126HWT	26.95 x 13.72 x 7.98 (685 x 348 x 203)	24.00 x 12.87 x 7.33 (610 x 327 x 186)	25.75 x 6.25 (654 x 159)	6.33 (161)	19.25 (489)	7.25 (184)	21.00 x 8.37 (533 x 213)	2 4	26 lbs.	BP2412**

All measures are in inches, items in parentheses are in millimeters.

*Made to order.

**Panel sold separately

N Series – Opaque Cover

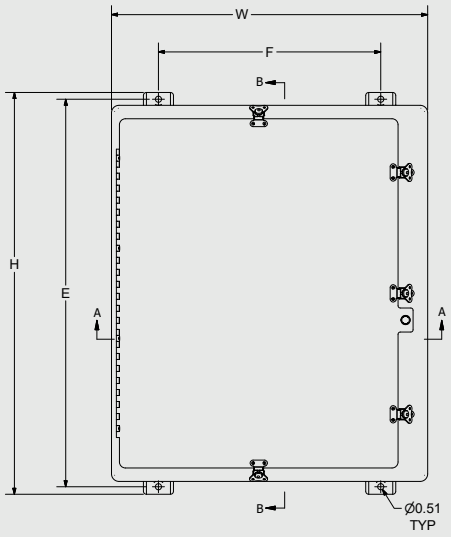
CATALOG NUMBER	OVERALL H X W X D	INSIDE A X B X C	MOUNTING E X F	J	K	L	ENCLOSURE OPENING M X N	NO. OF LATCHES	SHIP WEIGHT	PANEL NUMBER
N241210HWT N241210FHLWT N241210RT	26.95 x 13.72 x 12.49 (685 x 348 x 317)	24.00 x 12.87 x 11.33 (610 x 327 x 288)	25.75 x 6.25 (654 x 159)	10.33 (262)	19.25 (489)	7.25 (184)	21.00 x 8.37 (533 x 213)	2	25 lbs.	BP2412**
N24208HWT N24208FHLWT N24208WT N24208RT N24208FHLRT N24208	27.00 x 21.24 x 9.90 (686 x 539 x 252)	24.05 x 20.39 x 9.25 (611 x 518 x 235)	25.75 x 14.00 (654 x 356)	8.25 (209)	19.25 (489)	15.25 (387)	21.25 x 16.00 (540 x 406)	2 2 6 4 4 2	32 lbs.	BP2420**
N242010HWT* N242010RT* N242010*	27.00 x 21.24 x 11.90 (686 x 539 x 302)	24.05 x 20.39 x 11.25 (611 x 518 x 286)	25.75 x 14.00 (654 x 356)	10.25 (209)	19.25 (489)	15.25 (387)	21.25 x 16.00 (540 x 406)	2 4 2	37 lbs.	BP2420**
N242410HWT N242410FHLWT N242410WT N242410RT N242410FHLRT N242410	27.00 x 25.24 x 11.90 (686 x 641 x 302)	24.05 x 24.39 x 11.25 (611 x 619 x 286)	25.75 x 17.87 (654 x 454)	10.25 (260)	19.25 (489)	19.25 (489)	21.25 x 20.00 (540 x 508)	2 2 6 4 4 2	38.5 lbs.	BP2424**
N242412HWT* N242412WT* N242412RT* N242412*	27.00 x 25.24 x 13.90 (686 x 641 x 353)	24.05 x 24.39 x 13.25 (611 x 619 x 336)	25.75 x 17.87 (654 x 454)	12.25 (311)	19.25 (489)	19.25 (489)	21.25 x 20.00 (540 x 508)	2 2 6 4 2	42.1 lbs.	BP2424**
N30206HWT	32.86 x 20.99 x 7.89 (835 x 533 x 200)	29.90 x 20.14 x 7.23 (760 x 511 x 184)	30.75 x 14.25 (806 x 362)	6.23 (158)	25.25 (641)	15.25 (387)	27.00 x 16.50 (686 x 419)	2	34 lbs.	BP3020**
N30208HWT N30208FHLWT N30208WT N30208RT N30208FHLRT N30208	32.86 x 20.99 x 9.89 (835 x 533 x 251)	29.90 x 20.14 x 9.23 (760 x 511 x 234)	31.75 x 14.25 (806 x 362)	8.23 (209)	25.25 (641)	15.25 (387)	27.00 x 16.50 (686 x 419)	2 2 8 5 5 2	37 lbs.	BP3020**
N302010HWT N302010RT N302010FHLRT N302010	32.86 x 20.99 x 11.89 (835 x 533 x 302)	29.90 x 20.14 x 11.23 (760 x 511 x 285)	31.75 x 14.25 (806 x 362)	10.23 (260)	25.25 (641)	15.25 (387)	27.00 x 16.50 (686 x 419)	2 2 5 2	39 lbs.	BP3020**
N302012HWT* N302012WT* N302012*	32.86 x 20.99 x 13.89 (835 x 533 x 353)	29.90 x 20.14 x 13.23 (760 x 511 x 336)	31.75 x 14.25 (806 x 362)	12.23 (311)	25.25 (641)	15.25 (387)	27.00 x 16.50 (686 x 419)	8 5 2	42.2 lbs.	BP3020**
N302014HWT* N302014FHLWT* N302014*	32.86 x 20.99 x 15.89 (835 x 533 x 404)	29.90 x 20.14 x 15.23 (760 x 511 x 387)	31.75 x 14.25 (806 x 362)	14.23 (361)	25.25 (641)	15.25 (387)	27.00 x 16.50 (686 x 419)	5 5 2	44 lbs.	BP3020**

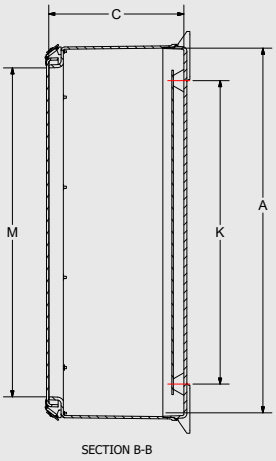
All measures are in inches, items in parentheses are in millimeters.

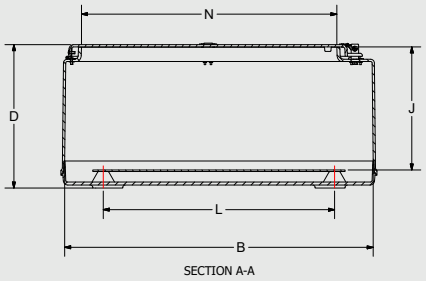
*Made to order.

**Panel sold separately

N Series – Wall Mount







NOTES:
1. CATALOG DRAWING IS FOR REFERENCE ONLY
2. SEE ACTUAL PART DRAWING FOR SPECIFIC DESIGN
3. DIMENSION "J" IS WITH 0.105" THICK BACK PANEL INSTALLED
4. BACK PANEL SOLD SEPARATELY

SCREW SIZES & TORQUE VALUES

PRODUCT SIZES	BACK PANEL SCREW SIZE	BACK PANEL RECOMMENDED TORQUE	COVER SCREW SIZE	RECOMMENDED MOUNTING FLANGE TORQUE
N1610 up to N4836	#3/8-16 x 1/2 Hex Bolt	28 - 32 in-lbs	N/A	80 in-lbs max
All made to order	#3/8-16 Stud	28 - 32 in-lbs	N/A	80 in-lbs max

N Series – Opaque Cover

CATALOG NUMBER	OVERALL H X W X D	INSIDE A X B X C	MOUNTING E X F	J	K	L	ENCLOSURE OPENING M X N	NO. OF LATCHES	SHIP WEIGHT	PANEL NUMBER
N30247HWT	33.41 x 26.32 x 8.81	30.46 x 25.47 x 8.12	32.25 x 18.50	7.12	25.25	19.25	27.38 x 21.25	2	46.3 lbs.	BP3024**
N30247FHLWT	(849 x 668 x 224)	(774 x 647 x 206)	(819 x 470)	(181)	(641)	(489)	(695 x 540)	8		
N30247WT								5		
N30247RT								5		
N30247								2		
N302410HWT	33.41 x 26.32 x 11.95	30.46 x 25.47 x 11.27	32.25 x 18.50	10.27	25.25	19.25	27.38 x 21.25	2	52.2 lbs.	BP3024**
N302410FHLWT	(849 x 668 x 304)	(774 x 647 x 286)	(819 x 470)	(261)	(641)	(489)	(695 x 540)	2		
N302410RT								5		
N302410FHLRT								5		
N302410								2		
N302412HWT	33.41 x 26.32 x 13.79	30.46 x 25.47 x 13.10	32.25 x 18.50	12.1	25.25	19.25	27.38 x 21.25	2	52 lbs.	BP3024**
N302412FHLWT	(849 x 668 x 350)	(774 x 647 x 333)	(819 x 470)	(307)	(641)	(489)	(695 x 540)	2		
N302412RT								5		
N302412FHLRT								5		
N302412								2		
N302414HWT*	33.41 x 26.32 x 15.79	30.46 x 25.47 x 15.10	32.25 x 18.50	14.1	25.25	19.25	27.38 x 21.25	2	56 lbs.	BP3024**
N302414FHLWT*	(849 x 668 x 401)	(774 x 647 x 384)	(819 x 470)	(358)	(641)	(489)	(695 x 540)	8		
N302414WT*								5		
N302414RT*								5		
N302414*								2		
N302416HWT*	33.41 x 26.32 x 17.79	30.46 x 25.47 x 17.10	32.25 x 18.50	16.1	25.25	19.25	27.38 x 21.25	2	56 lbs.	BP3024**
N302416FHLWT*	(849 x 668 x 452)	(774 x 647 x 434)	(819 x 470)	(409)	(641)	(489)	(695 x 540)	5		
N302416RT*								5		
N302416*								2		

All measures are in inches, items in parentheses are in millimeters.
Note: Mounting hole dimension is .50 inches.

**Made to order.*

***Panel sold separately*

N Series – Opaque Cover

CATALOG NUMBER	OVERALL H X W X D	INSIDE A X B X C	MOUNTING E X F	J	K	L	ENCLOSURE OPENING M X N	NO. OF LATCHES	SHIP WEIGHT	PANEL NUMBER
N302422HWT*	33.41 x 26.32 x 22.79 (849 x 668 x 579)	30.46 x 25.47 x 21.10 (774 x 647 x 536)	32.25 x 18.50 (819 x 470)	21.1 (536)	25.25 (641)	19.25 (489)	27.38 x 21.25 (695 x 540)	5	67 lbs.	BP3024**
N36308HWT N36308FHLWT N36308RT N36308	39.31 x 32.50 x 10.05 (999 x 826 x 255)	36.31 x 31.69 x 9.36 (922 x 805 x 238)	38.13 x 23.88 (968 x 606)	8.36 (212)	31.25 (794)	25.25 (641)	33.25 x 27.25 (845 x 692)	3 5 5 3	64.9 lbs.	BP3630**
N363010HWT N363010FHLWT N363010RT N363010	39.31 x 32.50 x 12.05 (999 x 826 x 306)	36.31 x 31.69 x 11.36 (922 x 805 x 289)	38.13 x 23.88 (968 x 606)	10.36 (263)	31.25 (794)	25.25 (641)	33.25 x 27.25 (845 x 692)	3 5 5	69 lbs.	BP3630**
N363012HWT N363012FHLWT N363012WT N363012RT N363012	39.31 x 32.50 x 14.05 (999 x 826 x 357)	36.31 x 31.69 x 13.36 (922 x 805 x 339)	38.13 x 23.88 (968 x 606)	12.36 (314)	31.25 (794)	25.25 (641)	33.25 x 27.25 (845 x 692)	3 8 5 5 3	71.6 lbs.	BP3630**
N363016HWT* N363016FHLWT* N363016RT* N363016*	39.31 x 32.50 x 18.58 (999 x 826 x 472)	36.31 x 31.69 x 17.39 (922 x 805 x 442)	38.13 x 23.88 (968 x 606)	16.39 (416)	31.25 (794)	25.25 (641)	33.25 x 27.25 (845 x 692)	3 5 5 3	75.4 lbs.	BP3630**
N363023HWT*	39.31 x 32.25 x 25.08 (999 x 819 x 637)	36.31 x 31.69 x 24.40 (922 x 805 x 620)	38.13 x 23.88 (968 x 606)	23.4 (594)	31.25 (794)	25.25 (641)	33.25 x 27.25 (845 x 692)	5	82 lbs.	BP3630**
N363613HWT* N363613FHLWT* N363613RT* N363613*	39.50 x 36.50 x 15.06 (1003 x 927 x 383)	36.25 x 36.25 x 14.50 (921 x 921 x 368)	38.25 x 28.50 (972 x 724)	13.50 (343)	29 (737)	31 (787)	32.00 x 32.00 (813 x 813)	3 3 9 9	81 lbs.	BP3636**
N483612RT N483612FHLWT N483612HWT N483612	51.29 x 36.62 x 13.93 (1303 x 930 x 354)	48.33 x 36.22 x 13.25 (1228 x 920 x 336)	50.12 x 28.50 (1273 x 724)	12.25 (311)	21.63 (549)	31.25 (794)	45.25 x 32.00 (1149 x 813)	3 10 10 3	96 lbs.	BP4836**
N483616RT N483616FHLWT N483616HWT N483616	51.29 x 36.62 x 17.93 (1303 x 930 x 456)	48.33 x 32.22 x 17.25 (1228 x 920 x 438)	50.12 x 28.50 (1273 x 724)	16.25 (413)	21.63 (549)	31.25 (794)	45.25 x 32.00 (1149 x 813)	3 10 10 3	109 lbs.	BP4836**
N602418RT* N602418HWT*	63.75 x 24.50 x 20.12 (1619 x 622 x 511)	60.38 x 36.13 x 19.44 (1533 x 918 x 493)	62.50 x 16.75 (1587 x 425)	18.44 (468)	27.63 (702)	19.25 (489)	57.25 x 20.00 (1454 x 508)	9	175 lbs.	BP6024**
N603612RT* N603612FHLWT* N603612HWT* N603612*	64.00 x 36.50 x 14.12 (1627 x 927 x 359)	60.62 x 36.13 x 13.44 (1540 x 918 x 441)	62.75 x 28.75 (1594 x 730)	12.44 (316)	27.63 (702)	31.25 (794)	57.25 x 32.00 (1454 x 813)	3 11 11 3	125 lbs.	BP6036**
N603616RT* N603616FHLWT* N603616HWT* N603616*	64.00 x 36.50 x 18.12 (1627 x 927 x 460)	60.62 x 36.13 x 17.44 (1540 x 918 x 443)	62.75 x 28.75 (1594 x 730)	16.44 (418)	27.63 (702)	31.25 (794)	57.25 x 32.00 (1454 x 813)	3 11 11 3	130 lbs.	BP6036**
N603624HWT*	63.75 x 36.50 x 26.12 (1619 x 927 x 663)	60.38 x 36.13 x 25.44 (1533 x 918 x 646)	62.50 x 28.75 (1587 x 730)	24.44 (621)	27.63 (702)	31.25 (794)	57.25 x 32.00 (1454 x 813)	11	140 lbs.	BP6036**

All measures are in inches, items in parentheses are in millimeters.
Note: Mounting hole dimension is .50 inches.

*Made to order.

**Panel sold separately

Bonded Window

Type 4X

HWT **CONFIGURATION**
Stainless steel hinged, latched down cover

HWT Construction

Material	SolarGuard® – Hot compression molded fiberglass reinforced polyester, hand layup FRP
Gasket	Poured polyurethane seamless gasket provides watertight, dust-tight environmental seal
Stainless Steel Hardware	300 Series stainless used on all hardware
Mounting Bosses	Panel mounting capability for fixed rear panel
Metal Inserts	All bosses utilize threaded brass inserts accepting 3/8"-16 screws
Soft Edge Design	Rounded edges, minimal protrusions or exposed pocket areas for assembly of dust and debris
Bonded Window	Precision routed flush bonded Super Abrasion Resistant acrylic material for maximum visibility
Color	Available standard glacier grey (PMS 428C)

HWT Modifications

Custom Colors	pg. 21-22
Silk Screening	pg. 21-22
EMI/RFI Shielding	pg. 21-22
Custom Window	pg. 21-22
Custom Cutouts/Holes	pg. 21-22

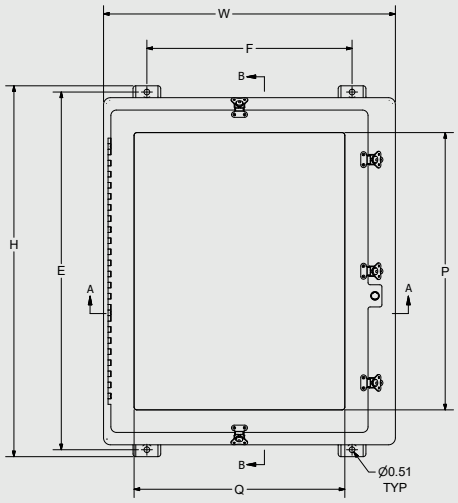
HWT Industry Standards

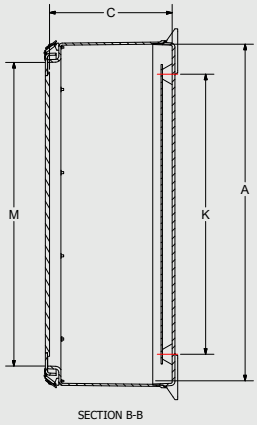
NEMA 250, UL Listed UL50, UL50e, UL508A	File E64358 Type 1, 3, 3R, 4X, 12
CSA Std C22.2	File LR069014 Type 1, 3, 3R, 4X, 12
IEC 60529	File E362920 IP66
UL 1741	File E333478
Temperature Range	(-76°F to +274°F) (-60°C to +134°C)
Temperature Range Window	(-26°F to +170°F) (-32°C to +76°C)
Flammability Rating	UL94-5V
Impact Rating	IK 10
Window Flammability	UL94V-HB
Self Extinguishing	Non-halogenated, non-flame propagating
Chemical Resistance	Full chemical resistance charts listed in appendix
Outdoor Exposure UL746C	(f1) Rated

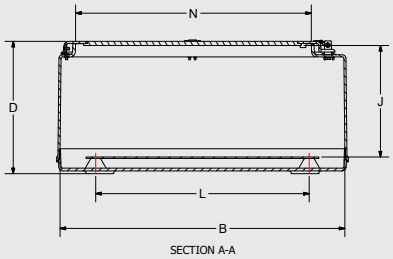
HWT Accessories

PANELS	**Aluminum**	BP_AL	pg. 178
	Fiberglass	BP_FG	pg. 178
	Stainless Steel	BP_SS	pg. 178
	Carbon Steel	BP_CS	pg. 178
	Dead Front Panels		pg. 180-181
ACCESSORIES	**Drain & Breather Vents**		pg. 185
	Hole Plugs		pg. 187
	Assorted Hubs and Cord Grips		pg. 188-189
	All Other Accessories		pg. 184-194

N Series – Wall Mount







NOTES:
1. CATALOG DRAWING IS FOR REFERENCE ONLY
2. SEE ACTUAL PART DRAWING FOR SPECIFIC DESIGN
3. DIMENSION "J" IS WITH 0.105" THICK BACK PANEL INSTALLE
4. BACK PANEL SOLD SEPARATELY

SCREW SIZES & TORQUE VALUES

PRODUCT SIZES	BACK PANEL SCREW SIZE	BACK PANEL RECOMMENDED TORQUE	COVER SCREW SIZE	RECOMMENDED MOUNTING FLANGE TORQUE
N1610 up to N4836	#3/8-16 x 1/2 Hex Bolt	28 - 32 in-lbs	N/A	80 in-lbs max
All made to order	#3/8-16 Stud	28 - 32 in-lbs	N/A	80 in-lbs max

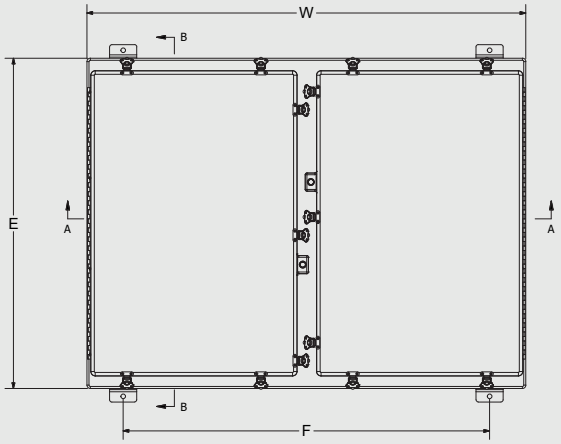
N Series – Bonded Window

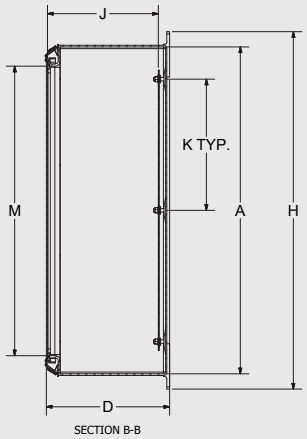
CATALOG NUMBER	OVERALL H X W X D	INSIDE A X B X C	WINDOW AREA (MAXIMUM) P X Q	MOUNTING E X F	J	K	L	ENCLOSURE OPENING M X N	NO. OF LATCHES	SHIP WEIGHT	PANEL NUMBER
NW201610HWT	22.75 x 16.87 x 11.77 (578 x 429 x 299)	19.70 x 16.04 x 11.24 (500 x 407 x 286)	14 x 10 (356 x 254)	21.50 x 10.12 (546 x 257)	10.26 (261)	15.25 (387)	11.25 (286)	16.75 x 12.19 (425 x 310)	2	24 lbs.	BP2016*
NW241210HWT	26.95 x 13.72 x 11.99 (685 x 348 x 304)	24.00 x 12.87 x 11.33 (610 x 327 x 288)	18 x 6 (457 x 152)	25.75 x 6.25 (654 x 159)	10.33 (262)	19.25 (489)	7.25 (184)	21.00 x 8.37 (533 x 213)	2	26 lbs.	BP2412*
NW24208HWT	27.00 x 21.24 x 9.90 (686 x 539 x 252)	24.05 x 20.39 x 9.25 (611 x 518 x 235)	19 x 14 (483 x 356)	25.75 x 14.00 (654 x 356)	8.25 (209)	19.25 (489)	15.25 (387)	21.25 x 16.00 (540 x 406)	4	34 lbs.	BP2420*
NW242410HWT	27.00 x 25.24 x 11.90 (686 x 641 x 302)	24.05 x 24.39 x 11.25 (611 x 619 x 286)	19 x 18 (483 x 457)	25.75 x 17.87 (654 x 454)	10.25 (260)	19.25 (489)	19.25 (489)	21.25 x 20.00 (540 x 508)	4	45 lbs.	BP2424*
NW30208HWT	32.86 x 20.99 x 9.89 (835 x 533 x 251)	29.90 x 20.14 x 9.23 (760 x 511 x 234)	24 x 14 (610 x 356)	31.75 x 14.25 (806 x 362)	8.23 (209)	25.25 (641)	15.25 (387)	27.00 x 16.50 (686 x 419)	5	39 lbs.	BP3020*
NW302410HWT	33.41 x 26.32 x 11.95 (849 x 668 x 304)	30.46 x 25.47 x 11.27 (774 x 647 x 286)	25 x 19 (635 x 483)	32.25 x 18.50 (819 x 470)	10.27 (261)	25.25 (641)	19.25 (489)	27.38 x 21.25 (695 x 540)	5	54 lbs.	BP3024*
NW363012HWT	39.31 x 32.50 x 14.05 (999 x 826 x 357)	36.31 x 31.69 x 13.36 (922 x 805 x 339)	31 x 25 (787 x 635)	38.13 x 23.88 (968 x 606)	12.36 (314)	31.25 (794)	25.25 (641)	33.25 x 27.25 (845 x 692)	5	86 lbs.	BP3630*
NW483612HWT	51.29 x 36.62 x 13.93 (1303 x 930 x 354)	48.33 x 36.22 x 13.25 (1228 x 920 x 336)	43 x 30 (1092 x 762)	50.12 x 28.5 (1273 x 724)	1225 (311)	21.63 (549)	31.25 (794)	45.25 x 32.00 (1149 x 813)	10	99.8 lbs.	BP4836*

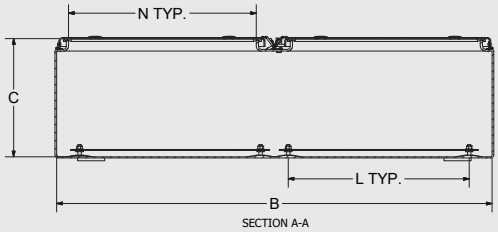
All measures are in inches, items in parentheses are in millimeters.

*Panel sold separately

N Series – Wall Mount







NOTES:
1. CATALOG DRAWING IS FOR REFERENCE ONLY
2. SEE ACTUAL PART DRAWING FOR SPECIFIC DESIGN
3. NOTE "J" DIMENSION IS WITH 0.105" THICK BACK PANEL INSTALLED
4. BACK PANEL IS SOLD SEPARATELY

SCREW SIZES & TORQUE VALUES

PRODUCT SIZES	BACK PANEL SCREW SIZE	BACK PANEL RECOMMENDED TORQUE	COVER SCREW SIZE	RECOMMENDED MOUNTING FLANGE TORQUE
N1610 up to N4836	#3/8-16 x 1/2 Hex Bolt	28 - 32 in-lbs	N/A	80 in-lbs max
All made to order	#3/8-16 Stud	28 - 32 in-lbs	N/A	80 in-lbs max

N Series – Double Door

CATALOG NUMBER	OVERALL H X W X D	INSIDE A X B X C	MOUNTING E X F	J	K	L	ENCLOSURE OPENING M X N	NO. OF LATCHES	SHIP WEIGHT	PANEL NUMBER
N364812DDRT* N364812DDHWT*	39.50 x 48.50 x 13.62 (1003 x 1232 x 346)	36.12 x 48.12 x 13.00 (917 x 1222 x 330)	38.25 x 40.5 (972 x 1029)	11.94 (303)	14.50 (368)	20.00 (508)	32.00 x 20.75 (813 x 527)	6 14	140 lbs.	BP3648 (2)**
N54428DDRT* N54428DDHWT*	57.50 x 42.50 x 9.62 (1460 x 1080 x 244)	54.12 x 42.12 x 9.00 (1374 x 1069 x 228)	56.25 x 34.50 (1429 x 876)	7.94 (201)	23.50 (596)	17.00 (431)	50.00 x 17.50 (1270 x 444)	8	162 lbs.	BP5442 (2)**

All measures are in inches, items in parentheses are in millimeters.
Note: Mounting hole dimension is .50 inches.

*Made to order.

**Panel sold separately

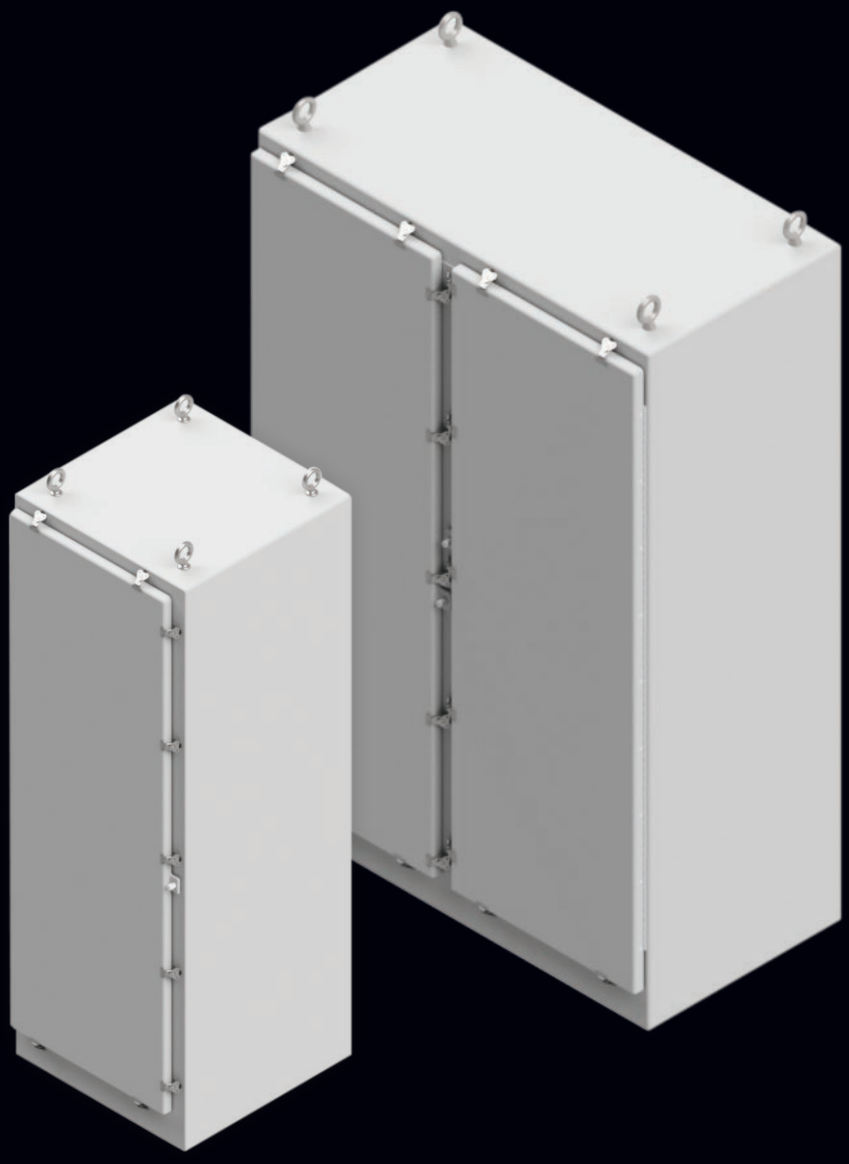
Communications & Telecom

"We have been successfully using several models of Stahlin non-metallic enclosures for more than six years. These products have provided reliable durability in remote locations, corrosion resistance, configuration options, and of most importance, compatibility for enabling our systems to achieve effective satellite linkage. We now package our satellite terminals inside Stahlin enclosures. These terminals transmit and receive with ease through non-metallic enclosures. Additionally, by using Stahlin enclosures we have simplified our packaging problems by mounting satellite communications solutions directly inside the enclosure, thereby reducing our total parts count."

– **Fred,** *VP Sales & Marketing*
Leader in Wireless Telecommunications

Read more at: **stahlin.com/industries**

N Series – Freestanding



N Series – Freestanding

Stahlin's **Control Series** is designed to accommodate electrical, electronic, instrumentation and mechanical controls indoors and outdoors where corrosion resistant watertight enclosures are needed to provide protection against windblown dust and rain, splashing and hose directed water. The "N" designation reflects a NEMA range series of large capacity enclosures.

With the ample working space involved, the free standing control tower enclosure style will also accommodate combination hydraulic or pneumatic controls along with the supporting electrical control. Fiberglass reinforced polyester supports a very high temperature range and corrosion resistance when used in oil field, mining, oil platform, water/wastewater and general processing controls. Yet, the pleasing cosmetic construction is ideally suited for ordinary indoor or outdoor industrial control mounting.

Product Configurations

SINGLE DOOR

FS	FSHWT	FSF HLWT	FSRT
TYPE 12, SS HINGED, LATCHED DOWN COVER	TYPE 4X, SS HINGED, LATCHED DOWN COVER	TYPE 4X, FIBERGLASS HINGED, THROUGH-THE-DOOR LATCHES	TYPE 3R, SS HINGED, LATCHED DOWN COVER

DOUBLE DOOR

FSDD	FSDD HWT	FSDD FHLWT	FSDDRT
TYPE 12, SS HINGED, LATCHED DOWN COVER	TYPE 4X, SS HINGED, LATCHED DOWN COVER	TYPE 4X, FIBERGLASS HINGED, THROUGH-THE-DOOR LATCHES	TYPE 3R, SS HINGED, LATCHED DOWN COVER

Attributes

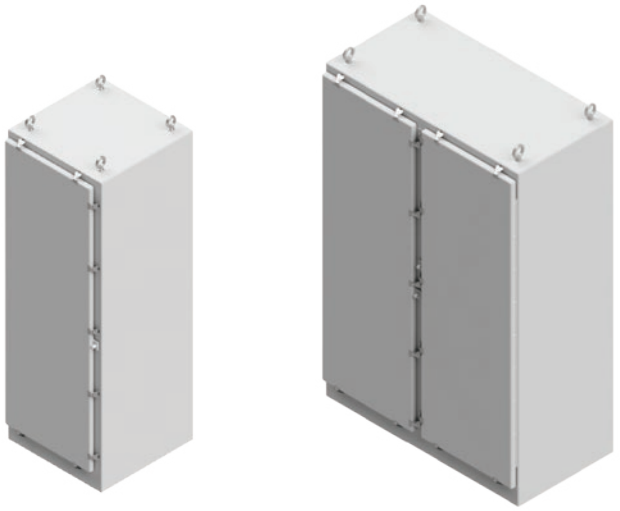
- Fiberglass reinforced polyester material
- 300 series stainless steel hardware
- Glassed in panel mounting studs
- High temperature, flame-retardant, non-corrosion environmental designs
- Padlockable HASP
- Glassed in enclosure lifting rings

Industry Standards

NEMA 250, UL Listed UL50, UL50e, UL508A	File E64358 Type 1, 3, 3R, 4X, 12 as designated
CSA Std C22.2	File LR069014 Type 1, 3, 3R, 4X, 12 as designated
IEC 60529	File E362920 IP66
Temperature Range	(-76°F to +274°F) (-60°C to +134°C)
Flammability Rating	UL94-5V
Impact Rating	IK10
Self Extinguishing	Non-halogenated, non-flame propagating
Chemical Resistance	Full chemical resistance charts listed in appendix
NFPA No. 101 Flame Spread	Class A (1)
Outdoor UV Exposure UL746C	(f1) Rated
Color	Available standard in glacier grey (Pantone 428C)

Opaque Cover

FS **CONFIGURATION**
Single & double door



FS Construction

Material	SolarGuard® – Hot compression molded fiberglass reinforced polyester, hand layup FRP
Gasket	PORON Polyurethane strip gasket provides watertight, dust-tight environmental seal
Stainless Steel Hardware	300 Series stainless used on all hardware
Mounting Bosses	Panel mounting capability for fixed rear panel
Metal Inserts	Metal studs 3/8"-16 panel stud
Soft Edge Design	Rounded edges, minimal protrusions or exposed pocket areas for assembly of dust and debris
Color	Available standard glacier grey (PMS 428C)

FS Modifications

Custom Colors	pg. 21-22
Silk Screening	pg. 21-22
EMI/RFI Shielding	pg. 21-22
Custom Window	pg. 21-22
Custom Cutouts/Holes	pg. 21-22

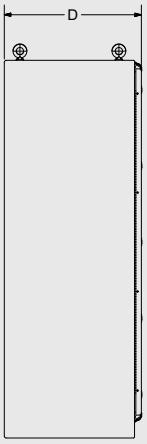
FS Industry Standards

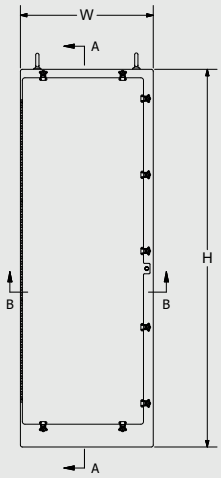
NEMA 250, UL Listed **UL50, UL50e, UL508A**	File E64358 Type 1, 3, 3R, 4X, 12
CSA Std C22.2	File LR069014 Type 1, 3, 3R, 4X, 12
IEC 60529	File E362920 IP66
UL 1741	File E333478
Temperature Range	(-76°F to +274°F) (-60°C to +134°C)
Flammability Rating	UL94-5V
Impact Rating	IK 10
Self Extinguishing	Non-halogenated, non-flame propagating
Chemical Resistance	Full chemical resistance charts listed in appendix
NFPA No. 101 Flame Spread	Class A (1)
Outdoor Exposure UL746C	(f1) Rated

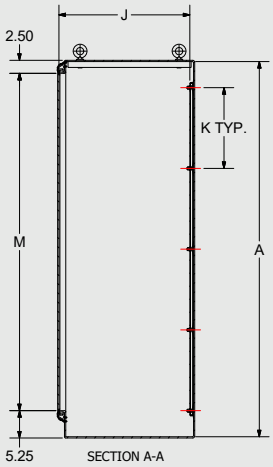
FS Accessories

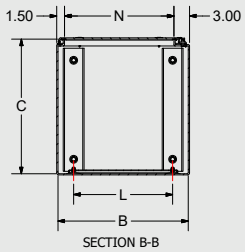
PANELS	**Aluminum**	BP_AL	pg. 179
	Fiberglass	BP_FG	pg. 179
	Stainless Steel	BP_SS	pg. 179
	Carbon Steel	BP_CS	pg. 179
	Dead Front Panels		pg. 180-181
ACCESSORIES	**Drain & Breather Vents**		pg. 185
	Hole Plugs		pg. 187
	Assorted Hubs and Cord Grips		pg. 188-189
	All Other Accessories		pg. 184-194

N Series – Freestanding









NOTES:
1. CATALOG DRAWING IS FOR REFERENCE ONLY
2. SEE ACTUAL PART DRAWING FOR SPECIFIC DESIGN
3. NOTE "J" DIMENSION IS WITH 0.128" THICK BACK PANEL INSTALLED
4. BACK PANEL SOLD SEPARATELY

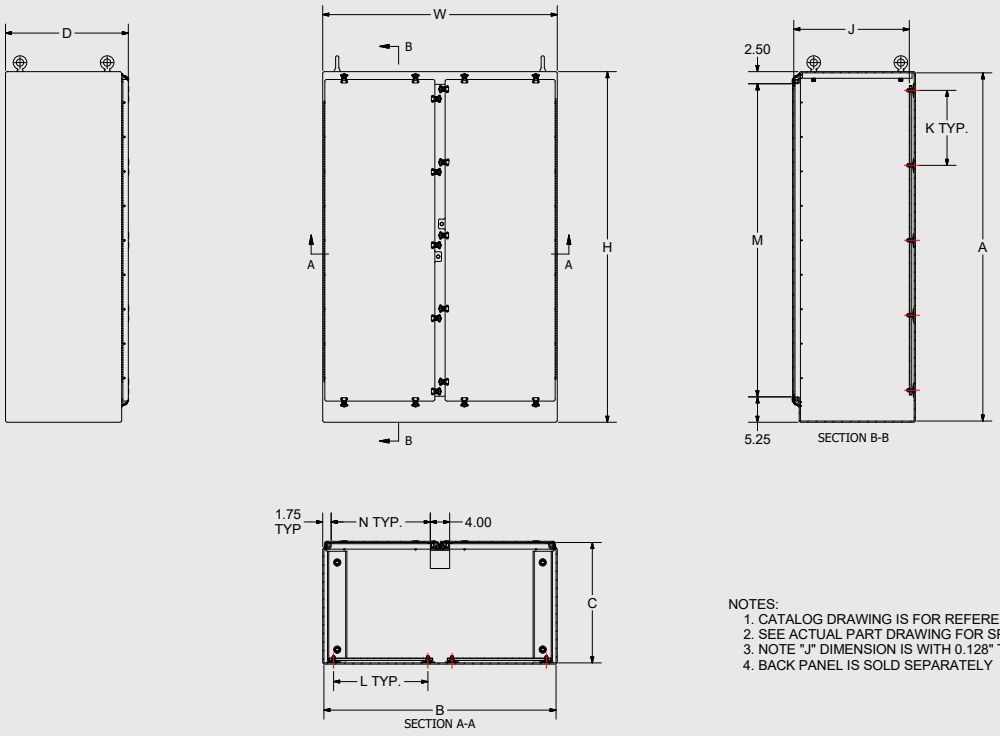
N Series – Control Tower Single Door

CATALOG NUMBER	OVERALL H X W X D	INSIDE A X B X C	J	K	L	ENCLOSURE OPENING M X N	NO. OF LATCHES	SHIP WEIGHT	PANEL NUMBER
N722418FSRT* N722418FSHWT*	72.50 x 24.50 x 19.38 (1841 x 610 x 492)	72.00 x 24.00 x 18.88 (1829 x 610 x 479)	17.88 (454)	15.50 (388)	18.00 (457)	64.75 x 20.00 (1645 x 508)	5 9	158 lbs.	BP7224**
N722525FSRT* N722525FSFHLWT* N722525FSHWT* N722525FS*	72.50 x 25.50 x 26.38 (1841 x 648 x 670)	72.00 x 25.00 x 25.88 (1829 x 635 x 657)	24.88 (632)	15.50 (388)	19.00 (483)	64.75 x 21.00 (1645 x 533)	5 9 9 5	230 lbs.	BP7225**
N723618FSFHLWT* N723618FSHWT*	72.50 x 36.50 x 19.38 (1841 x 927 x 492)	72.00 x 36.00 x 18.88 (1829 x 914 x 479)	17.88 (454)	15.50 (388)	30.00 (762)	64.75 x 32.00 (1645 x 813)	11	290 lbs.	BP7236**
N903620FSRT* N90360FSHWT*	90.50 x 36.50 x 21.38 (2299 x 927 x 543)	90.00 x 36.00 x 20.88 (2286 x 914 x 530)	19.88 (505)	20.00 (508)	30.00 (762)	82.75 x 32.00 (2102 x 813)	6	307 lbs.	BP9036**
N723018FSHWT*	72.50 x 30.50 x 19.38 (1841.5 x 774.7 x 492.3)	72.00 x 30.00 x 19.00 (1828.8 x 762.00 x 482.6)	17.88 (454.2)	14.63 (371.5)	24 (609.6)	64.75 x 26.00 (1644.7 x 660.4)	11	214 lbs.	BP7230**
N723024FSHWT*	72.50 x 30.50 x 25.38 (1841.5 x 774.7 x 644.65)	72.00 x 30.00 x 25.00 (1828.8 x 762.00 x 635.0)	24 (609.6)	14.63 (371.5)	24 (609.6)	64.75 x 26.00 (1644.7 x 660.4)	11	246 lbs.	BP7230**
N7236FSHWT*	72.50 x 37.38x 19.38 (1841.5 x 949 x 492.25)	72.00 x 36.88x 19.00 (1828.8 x 937 x 482.6)	17.88 (454.2)	14.63 (371.5)	30.00 (762.0)	64.75 x 32.00 (1644.7 x 812.8)	11	400 lbs.	BP7236**
N903624FSHWT*	90.50 x 37.38 x 25.38 (2298.7 x 949 x 644.65)	90.13 x 36.88 x 25.00 (2289.3 x 937 x 635.0)	30.88 (784.4)	14.63 (371.5)	30.00 (762.0)	82.75 x 32.00 (2101.9 x 812.8)	12	335 lbs.	BP9036**
N903636FSHWT*	90.50 x 37.38 x 37.38 (2298.7 x 949 x 949)	90.13 x 36.88 x 36.88 (2289.3 x 937 x 949)	36.88 (936.8)	15.31 (388.9)	30.00 (762.0)	82.75 x 32.00 (2101.9 x 812.8)	12	415 lbs.	BP9036**

All measures are in inches, items in parentheses are in millimeters.
Note: Mounting hole dimension is .50 inches.

**Made to order.*

***Panel sold separately*



NOTES:
1. CATALOG DRAWING IS FOR REFERENCE ONLY
2. SEE ACTUAL PART DRAWING FOR SPECIFIC DESIGN
3. NOTE "J" DIMENSION IS WITH 0.128" THICK BACK PANEL INSTALLED
4. BACK PANEL IS SOLD SEPARATELY

N Series – Control Tower Double Door

CATALOG NUMBER	OVERALL H X W X D	INSIDE A X B X C	MOUNTING E X F	J	K	L	ENCLOSURE OPENING M X N	NO. OF LATCHES	SHIP WEIGHT	PANEL NUMBER
N606012FSDDRT*	60.50 x 60.50 x 13.38 (1537 x 1537 x 340)	60.13 x 60.13 x 13.01 (1524 x 1524 x 324)	NA	11.88 (298)	13.00 (330)	25.50 (648)	52.75 x 26.50 (1340 x 673)	10	285 lbs.	BP6060**
N724818FSDD*	72.50 x 48.50 x 19.38 (1842 x 1232 x 492)	72.00 x 48.00 x 18.88 (1824 x 1219 x 476)	NA	17.88 (450)	15.50 (394)	19.50 (495)	64.75 x 20.50 (1645 x 521)	10	300 lbs.	BP7248**
N724925FSDDRT* N724925FSDD*	72.50 x 49.50 x 26.38 (1842 x 1257 x 670)	72.00 x 49.00 x 25.88 (1829 x 1245 x 654)	NA	24.88 (628)	15.50 (394)	20.00 (508)	64.75 x 21.00 (1645 x 533)	10	520 lbs.	BP7249**
N726012FSDD*	72.50 x 60.50 x 13.38 (1842 x 1537 x 340)	72.00 x 60.00 x 12.88 (1829 x 1524 x 324)	NA	11.88 (298)	15.50 (394)	25.50 (648)	64.75 x 26.50 (1645 x 673)	10	315 lbs.	BP7260**
N726018FSDD*	72.50 x 60.50 x 19.38 (1842 x 1537 x 492)	72.00 x 60.00 x 18.88 (1829 x 1524 x 476)	NA	17.88 (450)	15.50 (394)	25.50 (648)	64.75 x 26.50 (1645 x 673)	10	375 lbs.	BP7260**
N727212FSDDFHLWT*	72.50 x 72.50 x 13.38 (1842 x 1842 x 340)	72.00 x 72.00 x 12.88 (1829 x 1829 x 324)	NA	11.88 (298)	15.50 (394)	31.50 (800)	64.75 x 32.50 (1645 x 826)	22	480 lbs.	BP7272**
N727218FSDDRT*	72.50 x 72.50 x 19.38 (1842 x 1842 x 492)	72.00 x 72.00 x 18.88 (1829 x 1829 x 425)	NA	17.88 (400)	15.50 (394)	31.50 (800)	64.75 x 32.50 (1645 x 826)	10	557 lbs.	BP7272**
N727220FSDDFHLWT*	72.50 x 72.50 x 21.38 (1842 x 1842 x 543)	72.00 x 72.00 x 20.88 (1829 x 1829 x 527)	NA	19.88 (501)	15.50 (394)	31.50 (800)	64.75 x 32.50 (1645 x 826)	22	430 lbs.	BP7272**
N60488FSDDHWT*	60.50 x 48.50 x 9.38 (1536.7 x 1231.9 x 238.2)	60.13 x 48.13 x 9.01 (1527.2 x 1222.4 x 228.6)	24.00 (76.2)	8.00 (203.2)	12.63 (320.7)	19.50 (495.3)	54.50 x 20.50 (1384.3 x 520.7)	18	200 lbs.	BP6048**

All measures are in inches, items in parentheses are in millimeters.
Note: Mounting hole dimension is .50 inches.

*Made to order.

**Panel sold separately

N Series – Control Tower Double Door

CATALOG NUMBER	OVERALL H X W X D	INSIDE A X B X C	MOUNTING E X F	J	K	L	ENCLOSURE OPENING M X N	NO. OF LATCHES	SHIP WEIGHT	PANEL NUMBER
N60488FSDDHWT*	60.50 x 48.50 x 9.38 (1536.7 x 1231.9 x 238.2)	60.13 x 48.13 x 9.01 (1527.2 x 1222.4 x 228.6)	24.00 (76.2)	8.00 (203.2)	12.63 (320.7)	19.50 (495.3)	54.50 x 20.50 (1384.3 x 520.7)	18	200 lbs.	BP6048**
N604810FSDDHWT*	60.50 x 48.50 x 11.38) (1536.7 x 1231.9 x 289.1)	60.13 x 48.13 x 11.01 (1527.2 x 1222.4 x 279.654)	24.00 (76.2)	10 (254.0)	12.63 (320.7)	19.50 (495.3)	54.50 x 20.50 (1384.3 x 520.7)	18	212 lbs.	BP6048**
N604812FSDDHWT*	60.50 x 48.50 x 13.38) (1536.7 x 1231.9 x 339.852)	60.13 x 48.13 x 13.00 (1527.2 x 1222.4 x 330.3)	24.00 (76.2)	12 (304.8)	12.63 (320.7)	19.50 (495.3)	54.50 x 20.50 (1384.3 x 520.7)	18	223 lbs.	BP6048**
N604816FSDDHWT*	60.50 x 48.50 x 17.38) (1536.7 x 1231.9 x 441.452)	60.13 x 48.13 x 17.00 (1527.2 x 1222.4 x 431.8)	24.00 (76.2)	16 (406.4)	12.63 (320.7)	19.50 (495.3)	54.50 x 20.50 (1384.3 x 520.7)	18	246 lbs.	BP6048**
N604818FSDDHWT*	60.50 x 48.50 x 19.38) (1536.7 x 1231.9 x 492.252)	60.13 x 48.13 x 19.00 (1527.2 x 1222.4 x 482.6)	NA	18 (457.2)	12.63 (320.7)	19.50 (495.3)	54.50 x 20.50 (1384.3 x 520.7)	18	258 lbs.	BP6048**
N604820FSDDHWT*	60.50 x 48.50 x 21.38) (1536.7 x 1231.9 x 543.052)	60.13 x 48.13 x 21.00 (1527.2 x 1222.4 x 533.4)	NA	21 (533.4)	12.63 (320.7)	19.50 (495.3)	54.50 x 20.50 (1384.3 x 520.7)	18	269 lbs.	BP6048**
N604824FSDDHWT*	60.50 x 48.50 x 25.38) (1536.7 x 1231.9 x 644.652)	60.13 x 48.13 x 25.00 (1527.2 x 1222.4 x 635.0)	NA	24 (609.6)	12.63 (320.7)	19.50 (495.3)	54.50 x 20.50 (1384.3 x 520.7)	18	292 lbs.	BP6048**
N606010FSDDHWT*	60.50 x 60.50 x 11.38) (1536.7 x 1536.7 x 289.1)	60.13 x 60.13 x 11.01 (1527.2 x 1527.2 x 279.654)	24.00 (76.2)	10 (254.0)	12.13 (308.0)	25.50 (647.7)	54.50 x 26.50 (1384.3 x 673.1)	22	256 lbs.	BP6060**
N606012FSDDHWT*	60.50 x 60.50 x 13.38) (1536.7 x 1536.7 x 339.852)	60.13 x 60.13 x 11.00 (1527.2 x 1527.2 x 330.3)	24.00 (76.2)	12 (304.8)	12.13 (308.0)	25.50 (647.7)	54.50 x 26.50 (1384.3 x 673.1)	22	269 lbs.	BP6060**
N606016FSDDHWT*	60.50 x 60.50 x 17.38) (1536.7 x 1536.7 x 441.452)	60.13 x 60.13 x 17.00 (1527.2 x 1527.2 x 431.8)	24.00 (76.2)	16 (406.4)	12.13 (308.0)	25.50 (647.7)	54.50 x 26.50 (1384.3 x 673.1)	22	295 lbs.	BP6060**
N606018FSDDHWT*	60.50 x 60.50 x 19.38) (1536.7 x 1536.7 x 492.252)	60.50 x 60.50 x 19.00) (1536.7 x 1536.7 x 482.6)	NA	18 (457.2)	12.13 (308.0)	25.50 (647.7)	54.50 x 26.50 (1384.3 x 673.1)	22	308 lbs.	BP6060**
N606024FSDDHWT*	60.50 x 60.50 x 25.38) (1536.7 x 1536.7 x 644.652)	60.50 x 60.50 x 25.00) (1536.7 x 1536.7 x 635.0)	NA	24 (609.6)	12.13 (308.0)	25.50 (647.7)	54.50 x 26.50 (1384.3 x 673.1)	22	346 lbs.	BP6060**
N724818FSDDHWT*	72.50 x 48.50 x 19.38) (1841.5 x 1231.9 x 492.252)	72.00 x 48.13 x 19.00 (1828.8 x 1222.4 x 482.6)	NA	17.88 (454.2)	15.13 (384.2)	20.50 (520.7)	56.50 x 20.50 (1989.1 x 520.7)	18	300 lbs.	BP7248**
N724824FSDDHWT*	72.50 x 48.50 x 25.38) (1841.5 x 1231.9 x 644.652)	72.00 x 48.13 x 25.00 (1828.8 x 1222.4 x 635.0)	NA	24 (609.6)	15.13 (384.2)	20.50 (520.7)	56.50 x 20.50 (1989.1 x 520.7)	18	338 lbs.	BP7248**
N724925FSDDHWT*	72.50 x 49.50 x 26.38 (1842 x 1257 x 670)"	72.00 x 49.00 x 25.75 (1829 x 1244 x 654)	NA	24.74 (628)	15.13 (384.2)	20.5 (508.7)	64.75 x 21.00 (1645 x 533)	18	520 lbs	BP7249**
N726012FSDDHWT*	72.50 x 60.50 x 13.38) (1842 x 1536.7 x 339.852)	72.00 x 60.13 x 11.00 (1829 x 1527.2 x 330.3)	NA	12 (304.8)	15.13 (384.2)	25.50 (647.7)	66.5 x 26.5 (1689.1 x 673.1)	22	315 lbs.	BP7260**
N726016FSDDHWT*	72.50 x 60.50 x 17.38) (1842 x 1536.7 x 441.452)	72.00 x 60.13 x 17.00 (1829 x 1527.2 x 431.8)	NA	16 (406.4)	15.13 (384.2)	25.50 (647.7)	66.5 x 26.5 (1689.1 x 673.1)	22	343 lbs.	BP7260**
N726018FSDDHWT*	72.50 x 60.50 x 19.38) (1842 x 1536.7 x 492.252)	72.00 x 60.13 x 19.00 (1829 x 1527.2 x 482.6)	NA	18 (457.2)	15.13 (384.2)	25.50 (647.7)	66.5 x 26.5 (1689.1 x 673.1)	22	358 lbs.	BP7260**
N726024FSDDHWT*	72.50 x 60.50 x 25.38) (1842 x 1536.7 x 644.652)	72.00 x 60.13 x 25.00 (1829 x 1527.2 x 635.0)	NA	24 (609.6)	15.13 (384.2)	25.50 (647.7)	66.5 x 26.5 (1689.1 x 673.1)	22	400 lbs.	BP7260**
N727212FSDDHWT*	72.50 x 72.50 x 13.38) (1842 x 1842 x 339.852)	72.00 x 72.00 x 11.00 (1829 x 1829 x 330.3)	NA	12 (304.8)	15.13 (384.2)	31.50 (800.1)	66.5 x 32.5 (1689.1 x 825.5)	22	369 lbs.	BP7272**
N727218FSDDHWT*	72.50 x 72.50 x 19.38) (1842 x 1842 x 492.252)	72.00 x 72.00 x 19.00 (1829 x 1829 x 482.6)	NA	18 (457.2)	15.13 (384.2)	31.50 (800.1)	66.5 x 32.5 (1689.1 x 825.5)	22	415 lbs.	BP7272**
N727224FSDDHWT*	72.50 x 72.50 x 25.38 (1842 x 1842 x 644.652)	72.00 x 72.00 x 25.00 (1829 x 1829 x 635.0)	NA	24 (609.6)	15.13 (384.2)	31.50 (800.1)	66.5 x 32.5 (1689.1 x 825.5)	22	461 lbs.	BP7272**
N747212FSDDHWT*	74.50 x 72.50 x 13.38) (1892.3 x 1842 x 339.852)	74.00 x 72.00 x 11.00 (1879.6 x 1829 x 330.3)	24.00 (76.2)	12 (304.8)	15.63 (396.9)	31.50 (800.1)	68.5 x 32.5 (1695.5 x 825.5)	22	378 lbs.	BP7472**
N747224FSDDHWT*	74.50 x 72.50 x 13.38) (1892.3 x 1842 x 339.852)	74.00 x 72.00 x 11.00 (1879.6 x 1829 x 330.3)	24.00 (76.2)	24.00 (76.2)	15.63 (396.9)	31.50 (800.1)	68.5 x 32.5 (1695.5 x 825.5)	22	471 lbs.	BP7474**
N904820FSDDHWT*	90.50 x 48.50 x 21.38) (2298.7 x 1231.9 x 543.052)	90.13 x 48.13 x 21.00 (2289.3 x 1222.4 x 533.4)	NA	19.88 (505.0)	15.63 (396.9)	19.50 (495.3)	84.5 x 20.5 (2146.3 x 520.7)	12	378 lbs.	BP9048**
N907220FSDDHWT*	90.50 x 72.50 x 21.38) (2298.7 x 1842 x 543.052)	90.13 x 72.00 x 21.00 (2289.3 x 1829 x 533.4)	NA	19.88 (505.0)	15.63 (396.9)	31.50 (800.1)	84.5 x 32.12 (2146.3 x 816.0)	24	519 lbs.	BP9072**
N907224FSDDHWT*	90.50 x 72.50 x 25.38 (2298.7 x 1842 x 644.652)	90.13 x 72.00 x 25.00 (2289.3 x 1829 x 635.0)	NA	24 (609.6)	15.63 (396.9)	31.50 (800.1)	84.5 x 32.12 (2146.3 x 816.0)	24	553 lbs.	BP9072**
N907236FSDDHWT*	90.50 x 72.50 x 37.38 (2299 x 1842 x 949)	90.00 x 72.00 x 36.88 (2286 x 1829 x 937)	NA	35.88 (911)	20.00 (508)	31.5 (800)	82.75 x 32.13 (2102 x 816)	24	657 lbs	BP9072**

*Made to order.

**Panel sold separately

Lighting Control

"There are many contracting and manufacturing firms that will solicit/bid on state and city projects. They are not necessarily all local. Therefore, we were pleased when local companies won the bids for this project. All three of these Michigan firms proved that going local doesn't mean we were getting firms with less experience or higher cost. They all proved that going local is a great way to help the State of Michigan stay competitive and offer its citizens a great and viable place to live. Now, due to the help of these local firms, our city has a safer more attractive community for our constituents to enjoy."

– **Randy,** *Belding, Michigan's City Manager*

Read more at: **stahlin.com/industries**

Junction Style

DuraBoxx® Series

DuraBoxx® Series

The Stahlin **DuraBoxx® Series** was developed with a sleek design and shallow depths. These enclosures are suited for rugged, durable performance in both commercial and industrial indoor and outdoor environments such as mining, oil, gas, wastewater treatment, and petro-chem. Also, because of their pleasing aesthetics and flush cover design, they are well suited for high-end electronic applications such as wireless communications and operator interfaces.

Attributes

- → Flat cover with captive cover screws
- → DIN rail mounting capabilities
- → No sidewall obstructions, flush cover
- → Clear cover options available on select sizes
- → Back panels available for all sizes

Industry Standards

NEMA 250, UL Listed **UL50, UL50e, UL508A**	File E64358 Type 1, 3, 3S, 4X, 6, 6P, 12
CSA Std C22.2	File LR069014 Type 1, 3, 3S, 4X, 6, 6P, 12
IEC 60529	IP66, IP67, IP68
Temperature Range	(-26° F to +257° F) (-32° C to +125° C)
Flammability Rating	UL94-V0
Self Extinguishing	Non-halogenated, Non-flame propagating
Outdoor UV Exposure	(f1) Rated

Product Configurations

D SERIES

W

FLUSH FITTING COVER FASTENED BY CAPTIVE LID SCREWS

DL SERIES

W

FLUSH FITTING COVER FASTENED BY CAPTIVE LID SCREWS

D Series

W **CONFIGURATION**
Flush fitting cover fastened by captive lid screws

W Construction

Material	Hot compression molded fiberglass reinforced polyester (thermoset)
Gasket	Poured polyurethane seamless gasket provides watertight, dust-tight environmental seal
Recessed Screws	No protruding surfaces
Stainless Steel Hardware	300 Series stainless used on all hardware
Mounting Bosses	Panel mounting capability for fixed rear panel or DIN rail
Metal Inserts	All bosses utilize threaded brass inserts accepting M6 screws
Soft Edge Design	Rounded edges, minimal protrusions or exposed pocket areas for assembly of dust and debris

W Modifications

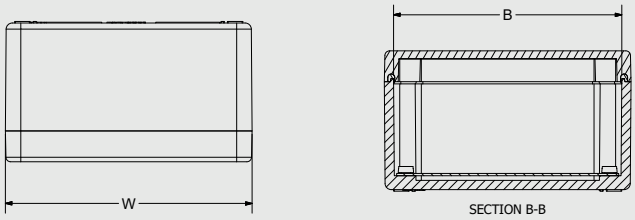
Custom Colors	pg. 21-22
Silk Screening	pg. 21-22
EMI/RFI Shielding	pg. 21-22
Custom Window	pg. 21-22
Custom Cutouts/Holes	pg. 21-22

W Industry Standards

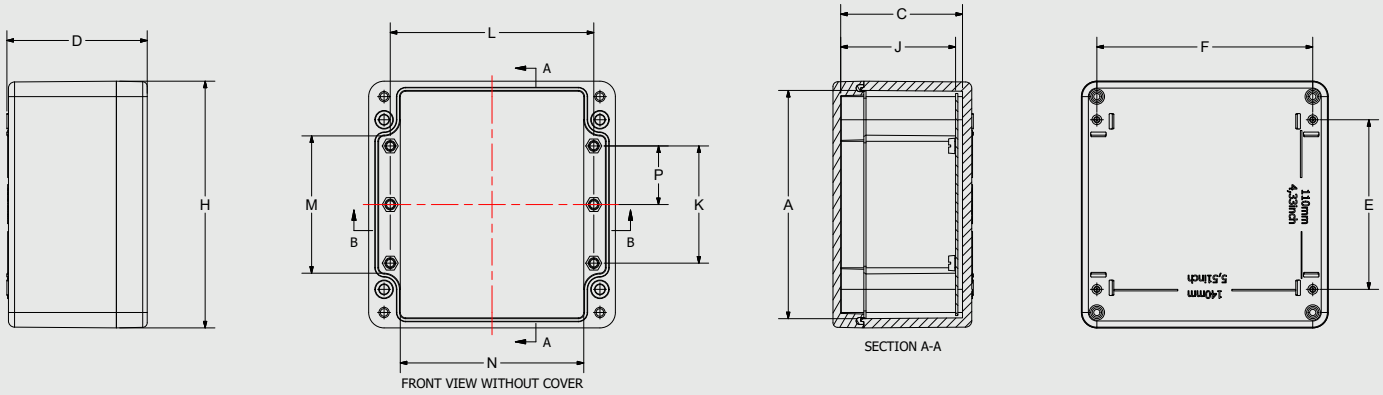
NEMA 250, UL Listed **UL50, UL50e, UL508A**	File E64358 Type 1, 3, 3S, 4X, 6, 6P, 12
CSA Std C22.2	File LR069014 Type 1, 3, 3S, 4X, 6, 6P, 12
IEC 60529	IP66, IP67, IP68
Temperature Range	(-26°F to +257°F) (-32°C to +125°C)
Flammability Rating	UL94-V0
Self Extinguishing	Non-halogenated, Non-flame propagating
Outdoor Exposure UL746C	(f1) Rated

W Accessories

	Aluminum Back Panels	D_BP	pg. 176
ACCESSORIES	**Drain & Breather Vents**		pg. 185
	Hole Plugs		pg. 187
	Assorted Hubs and Cord Grips		pg. 188-189
	All Other Accessories		pg. 184-194



NOTES:
1. CATALOG DRAWING IS FOR REFERENCE ONLY
2. SEE ACTUAL PART DRAWING FOR SPECIFIC DESIGN
3. DIMENSION "J" IS WITH BACK PANEL INSTALLED
4. BACK PANEL SOLD SEPARATELY



SCREW SIZES & TORQUE VALUES

PRODUCT SIZES	BACK PANEL SCREW SIZE	BACK PANEL RECOMMENDED TORQUE	COVER SCREW SIZE	COVER SCREW RECOMMENDED TORQUE	MOUNTING FOOT SCREW SIZE	MOUNTING FOOT SCREW RECOMMENDED TORQUE	RECOMMENDED MOUNTING FLANGE TORQUE
All Sizes	M6 x 9.5 mm	16 - 20 in-lbs	M6-1.0 x 35 mm	20 - 24 in-lbs	All Sizes	20 - 24 in-lbs	20 - 24 in-lbs

DuraBoxx® Series – D Series

CATALOG NUMBER	OVERALL H X W X D	INSIDE A X B X C	MOUNTING E X F	J	K	L	M X N	P	SHIP WEIGHT	PANEL NUMBER
D333W	2.95 x 3.15 x 2.98 (75 x 80 x 76)	2.56 x 2.76 x 2.56 (65 x 70 x 65)	1.57 x 2.48 (40 x 63)	2.26 (57)	N/A	2.28 (58)	1.06 x 1.93 (27) (49)	N/A	0.81 LB	D333BP*
D342W	2.95 x 4.33 x 2.22 (75 x 110 x 56)	2.56 x 3.96 x 1.81 (65 x 100 x 46)	1.77 x 3.86 (45 x 98)	1.53 (39)	N/A	3.50 (89)	1.29 x 3.37 (33) (86)	N/A	.88 LB	D342BP*
D554W DCC554W	4.72 x 4.80 x 3.58 (120 x 122 x 91)	4.33 x 4.41 x 3.15 (110 x 112 x 80)	3.23 x 4.17 (82 x 106)	2.93 (74)	2.05 (52)	3.74 (95)	2.56 x 3.50 (65) (89)	1.02 (26)	1.7 LB	D554BP*
D593W DCC593W	4.72 x 8.66 x 3.18 (120 x 220 x 81)	4.34 x 8.28 x 2.83 (110 x 210 x 72)	3.23 x 8.03 (82 x 204)	2.62 (67)	2.05 (52)	7.60 (193)	2.57 x 7.37 (65) (187)	1.02 (26)	2.4 LB	D593BP*
D594W DCC594W	4.72 x 8.66 x 3.58 (120 x 220 x 91)	4.33 x 8.27 x 3.15 (110 x 210 x 80)	3.23 x 8.03 (82 x 204)	2.93 (74)	2.05 (52)	7.60 (193)	2.57 x 7.37 (65) (187)	1.02 (26)	2.5 LB	D594BP*
D774W	6.30 x 6.30 x 3.58 (160 x 160 x 91)	5.79 x 5.79 x 3.11 (147 x 147 x 79)	4.33 x 5.51 (110 x 140)	2.93 (74)	2.99 (76)	5.20 (132)	3.50 x 4.68 (89) (119)	1.50 (38)	2.8 LB	D774BP*
D7114W	6.30 x 10.24 x 3.58 (160 x 260 x 91)	5.79 x 9.72 x 3.11 (147 x 247 x 79)	4.33 x 9.45 (110 x 240)	2.93 (74)	2.99 (76)	9.13 (232)	3.50 x 8.62 (89) (219)	1.50 (38)	3.8 LB	D7114BP*
D10105W	9.84 x 10.04 x 4.76 (250 x 255 x 121)	9.32 x 9.51 x 4.29 (237 x 242 x 109)	7.87 x 9.25 (200 x 235)	4.11 (104)	3.94 (100)	8.94 (227)	7.03 x 8.41 (179) (214)	1.97 (50)	6.4 LB	D10105BP*
D10165W	9.84 x 15.75 x 4.76 (250 x 400 x 121)	9.32 x 15.22 x 4.29 (237 x 387 x 109)	7.87 x 14.96 (200 x 380)	4.09 (104)	3.94 (100)	14.65 (327)	7.03 x 14.12 (179) (359)	1.97 (50)	8.8 LB	D10165BP*
D14144W	14.17 x 14.17 x 3.58 (360 x 360 x 91)	13.66 x 13.66 x 3.11 (347 x 347 x 79)	12.20 x 13.39 (310 x 340)	2.91 (74)	5.35 (136)	13.07 (332)	11.38 x 12.56 (289) (319)	2.68 (68)	8.0 LB	D14144BP*
D16165W	15.94 x 15.75 x 4.76 (405 x 400 x 121)	15.42 x 15.22 x 4.29 (392 x 387 x 109)	13.98 x 14.96 (355 x 380)	4.09 (104)	9.84 (250)	14.65 (372)	13.14 x 14.12 (334) (359)	4.92 (125)	11.0 LB	D16165BP*

DuraBoxx® Clear Cover Sizes: DCC Part Number.

** Panel ordered separately*

DL Series

W CONFIGURATION
Flush fitting cover fastened by captive lid screws

W Construction

Material	Hot compression molded fiberglass reinforced polyester (thermoset)
Gasket	Poured polyurethane seamless gasket provides watertight, dust-tight environmental seal
Recessed Screws	No protruding surfaces
Stainless Steel Hardware	300 Series stainless used on all hardware
Mounting Bosses	Panel mounting capability for fixed rear panel
Metal Inserts	All bosses utilize threaded brass inserts accepting M6 screws
Soft Edge Design	Rounded edges, minimal protrusions or exposed pocket areas for assembly of dust and debris

W Modifications

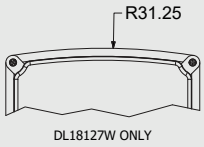
Custom Colors	pg. 21-22
Silk Screening	pg. 21-22
EMI/RFI Shielding	pg. 21-22
Custom Window	pg. 21-22
Custom Cutouts/Holes	pg. 21-22

W Industry Standards

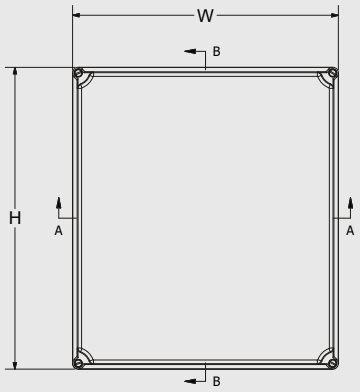
NEMA 250, UL Listed **UL50, UL50e, UL508A**	File E64358 Type 1, 3, 3S, 4X, 6, 6P, 12
CSA Std C22.2	File LR069014 Type 1, 3, 3S, 4X, 6, 6P, 12
IEC 60529	IP66, IP67, IP68
Temperature Range	(-26°F to +257°F) (-32°C to +125°C)
Flammability Rating	UL94-V0
Self Extinguishing	Non-halogenated, Non-flame propagating
Outdoor Exposure UL746C	(f1) Rated

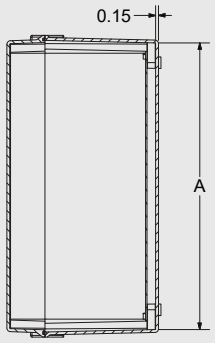
W Accessories

	Aluminum Back Panels	D_BP	pg. 176
ACCESSORIES	**Drain & Breather Vents**		pg. 185
	Hole Plugs		pg. 187
	Assorted Hubs and Cord Grips		pg. 188-189
	All Other Accessories		pg. 184-194

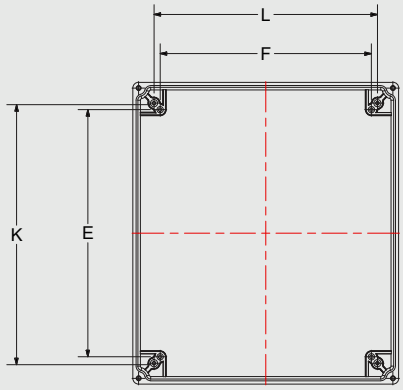


DL18127W ONLY

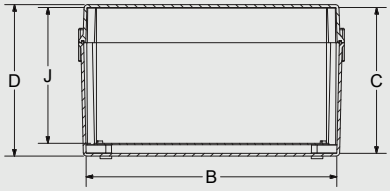




SECTION B-B



FRONT VIEW
WITHOUT COVER



SECTION A-A

NOTES:
1. CATALOG DRAWING IS FOR REFERENCE ONLY
2. SEE ACTUAL PART DRAWING FOR SPECIFIC DESIGN
3. NOTE "J" DIMENSION IS WITH 0.080" THICK BACK PANEL INSTALLED
4. BACK PANEL IS SOLD SEPARATELY

SCREW SIZES & TORQUE VALUES

PRODUCT SIZES	BACK PANEL SCREW SIZE	BACK PANEL RECOMMENDED TORQUE	COVER SCREW SIZE	COVER SCREW RECOMMENDED TORQUE	MOUNTING FOOT SCREW SIZE	MOUNTING FOOT SCREW RECOMMENDED TORQUE	RECOMMENDED MOUNTING FLANGE TORQUE
All Sizes	M6 x 9.5 mm	16 - 20 in-lbs	M6-1.0 x 35 mm	20 - 24 in-lbs	All Sizes	20 - 24 in-lbs	20 - 24 in-lbs

DuraBoxx® Series – DL Series

CATALOG NUMBER	OVERALL H X W X D	INSIDE A X B X C	MOUNTING E X F	J	K	L	SHIP WEIGHT	PANEL NUMBER
DL18127W	16.54 x 10.63 x 7.22 (420 x 270 x 183)	15.13 x 9.23 x 6.85 (384 x 234 x 174)	12.68 x 7.17 (322 x 182)	6.26 (159)	13.46 (342)	7.95 (202)	5.5 LBS	DL18127BP*
DL18168W	16.54 x 14.57 x 8.43 (420 x 370 x 214)	15.67 x 13.70 x 7.99 (398 x 348 x 203)	13.54 x 11.57 (344 x 294)	7.44 (189)	14.25 (362)	12.24 (311)	9.9 LBS	DL18168BP*
DL24168W	23.63 x 16.54 x 8.43 (600 x 420 x 214)	22.76 x 15.67 x 7.99 (578 x 398 x 203)	20.63 x 13.54 (524 x 344)	7.44 (189)	21.34 (542)	14.21 (361)	15.4 LBS	DL24168BP*

Caution: Metric units are for reference, do not convert.

**Panel sold separately*

Starke Series

Starke Series

Proven Protection When "Small Is A Big Advantage!" **Starke Series** is a polycarbonate enclosure series in either opaque (ST) screw cover or clear (STCC) screw cover versions.

The flush sides of the enclosure make it a sought-after OEM design product. Raised bosses accommodate back panel mounting and are successfully used for remote sensor mounting and small electronic controls in any environment.

Attributes

- → Available in 2 cover options
  1. Opaque cover
  2. Clear cover
- → Multiple depths available in most sizes
- → Resistant to harsh environments
- → Flush sides for that perfect fit
- → Multiple molded in bosses for a variety of mounting solutions

Industry Standards

NEMA 250, cULus Listed UL50, UL50e, UL508A	File # E64358 Type 1, 3R, 4, 4X, 12
IEC 60529 Ratings	IP66 Per UL File# E362920
Temperature Range	(-40°F to +212°F) (-40°C to +100°C)
Flammability Rating	UL94-V2
Self Extinguishing	Non-Halogenated
Certifications	cULus, IEC, REACH, RoHS
Chemical Resistance	Full chemical resistance charts listed in appendix
Outdoor UV Exposure	(f1) Rated

Product Configurations

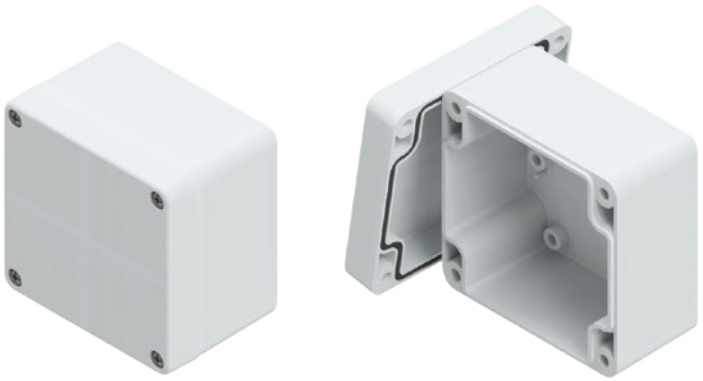
OPAQUE COVER

4 COVER SCREWS, LIFT OFF COVER

CLEAR COVER

4 COVER SCREWS, LIFT OFF COVER

Opaque Cover



W **CONFIGURATION**
4 cover screws, lift off cover

W Construction

Material (Box & Cover)	Polycarbonate
Gasket Material	Poured polyurethane seamless gasket
Cover Screw Material	304 Stainless Steel
Cover Screw Size	Various
Cover Screw Torque	M4: 9-17 in.-lbs., M6: 17-22 in.-lbs.
Color	Available standard in RAL 7035

W Modifications

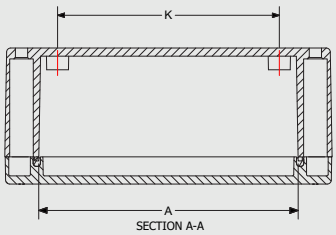
Silk Screening	pg. 21-22
Custom Cutouts/Holes	pg. 21-22

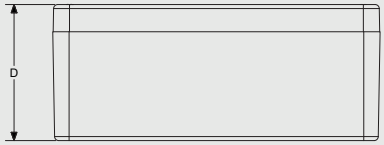
W Industry Standards

NEMA 250, cULus Listed **UL50, UL50e, UL508A**	File # E64358 Type 1, 3R, 4, 4X, 12
IEC 60529 Ratings	IP66 Per UL File# E362920
Temperature Range	(-40°F to +212°F) (-40°C to +100°C)
Flammability Rating	UL94-V2
Self Extinguishing	Non-Halogenated
Chemical Resistance	See chart pg. 198-204
Outdoor Exposure (UL 746C)	(f1) Rated

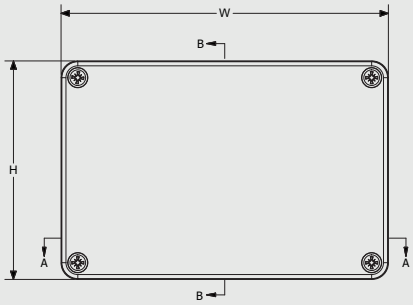
W Accessories

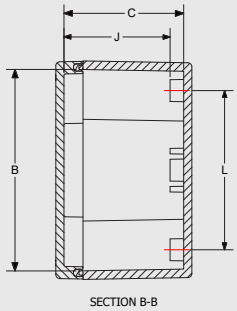
PANELS	**Phenolic Resin Hard Paper Back Panel**	BPB__P	pg. 177
	All Other Accessories		pg. 184-194

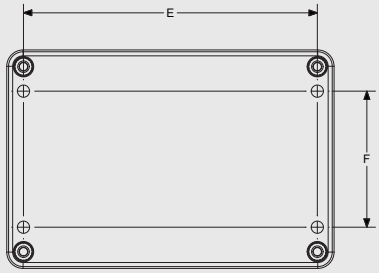




NOTES:
1. CATALOG DRAWING IS FOR REFERENCE ONLY
2. SEE ACTUAL PART DRAWING FOR SPECIFIC DESIGN
3. SOME SIZES HAVE (2) COVER SCREWS;
   SOME SIZES HAVE (4) COVER SCREWS;
   SOME SIZES HAVE (6) COVER SCREWS
4. MOUNTING BOSSES ALSO CHANGE BETWEEN PARTS
5. NOTE J DIMENSION IS WITHOUT BACK PANEL INSTALLED







SCREW SIZES & TORQUE VALUES

PRODUCT SIZES	BACK PANEL SCREW SIZE	BACK PANEL RECOMMENDED TORQUE	COVER SCREW SIZE	COVER SCREW RECOMMENDED TORQUE	RECOMMENDED MOUNTING FLANGE TORQUE
All Sizes	Plastite 48 #8	12-16 IN-LBS	M4	9-17 IN - LBS	25-30 IN-LBS
All Sizes	Plastite 48 #8	12-16 IN-LBS	M6	17-22 IN-LBS	25-30 IN-LBS

Starke Series – Opaque Cover

CATALOG NUMBER	OVERALL H X W X D	INSIDE A X B X C	MOUNTING E X F	J	K	L	SHIP WEIGHT	PANEL NUMBER
ST060555W	2.56 x 1.97 x 2.17 (65 x 50 x 55)	2.36 x 1.77 x 1.93 (60 x 45 x 49)	2.07 x 1.50 (53 x 38)	1.73 (44)	1.50 (38)	N/A	0.18 lbs.	BPB0605P
ST090603W	3.86 x 2.52 x 1.46 (98 x 64 x 37)	3.54 x 2.20 x 1.93 (90 x 56 x 49)	3.39 x 2.05 (86 x 52)	1.10 (28)	3.19 (81)	N/A	0.25 lbs.	N/A
ST080805W	3.23 x 3.15 x 2.17 (82 x 80 x 55)	3.03 x 2.95 x 1.93 (77 x 75 x 49)	2.76 x 1.97 (70 x 50)	1.73 (44)	2.28 (58)	2.28 (58)	0.32 lbs.	BPB0808P
ST080809W	3.23 x 3.15 x 3.35 (82 x 80 x 85)	3.03 x 2.95 x 3.11 (77 x 75 x 79)	2.76 x 1.97 (70 x 50)	2.91 (74)	1.73 (44)	2.28 (58)	0.40 lbs.	BPB0808P
ST080810W	3.23 x 3.15 x 3.74 (82 x 80 x 95)	3.03 x 2.95 x 3.50 (77 x 75 x 89)	2.76 x 1.97 (70 x 50)	2.91 (74)	1.73 (44)	2.28 (58)	0.44 lbs.	BPB0808P
ST128055W	4.72 x 3.15 x 2.17 (120 x 80 x 55)	4.49 x 2.91 x 1.93 (114 x 74 x 49)	4.25 x 1.97 (108 x 50)	1.73 (44)	3.78 (96)	2.32 (59)	0.39 lbs.	BPB1280P
ST128010W	4.72 x 3.15 x 3.94 (120 x 80 x 100)	4.49 x 2.91 x 3.74 (114 x 74 x 95)	4.25 x 1.97 (108 x 50)	3.58 (91)	3.23 (82)	2.32 (59)	0.55 lbs.	BPB1280P

Starke Series – Opaque Cover

CATALOG NUMBER	OVERALL H X W X D	INSIDE A X B X C	MOUNTING E X F	J	K	L	SHIP WEIGHT	PANEL NUMBER
ST168055W	6.30 x 3.15 x 2.17 (160 x 80 x 55)	6.10 x 2.91 x 1.93 (155 x 74 x 49)	5.83 x 1.97 (148 x 50)	1.73 (44)	4.80 (122)	2.28 (58)	0.50 lbs.	BPB1680P
ST168090W	6.30 x 3.15 x 3.54 (160 x 80 x 90)	6.10 x 2.91 x 3.31 (155 x 74 x 84)	5.83 x 1.97 (148 x 50)	3.11 (79)	4.80 (122)	2.28 (58)	0.65 lbs.	BPB1680P
ST121255W	4.80 x 4.72 x 2.17 (122 x 120 x 55)	4.57 x 4.49 x 1.97 (116 x 114 x 50)	4.33 x 3.54 (110 x 90)	1.73 (44)	3.31 (84)	3.86 (98)	0.52 lbs.	BPB1212P
ST121275W	4.80 x 4.72 x 2.95 (122 x 120 x 75)	4.57 x 4.49 x 2.72 (116 x 114 x 69)	4.33 x 3.54 (110 x 90)	2.52 (64)	3.31 (84)	3.86 (98)	0.65 lbs.	BPB1212P
ST121211W	4.80 x 4.72 x 4.13 (122 x 120 x 105)	4.57 x 4.49 x 3.94 (116 x 114 x 100)	4.33 x 3.54 (110 x 90)	3.74 (95)	3.31 (84)	3.86 (98)	0.76 lbs.	BPB1212P
ST161255W	6.30 x 4.72 x 2.17 (160 x 120 x 55)	6.06 x 4.69 x 1.93 (154 x 114 x 49)	5.87 x 3.46 (149 x 88)	1.65 (42)	4.76 (121)	3.58 (91)	0.63 lbs.	BPB1612P
ST161290W	6.30 x 4.72 x 3.54 (160 x 120 x 90)	6.06 x 4.69 x 3.31 (154 x 114 x 84)	5.87 x 3.46 (149 x 88)	3.03 (77)	4.76 (121)	3.58 (91)	0.84 lbs.	BPB1612P
ST161214W	6.30 x 4.72 x 5.51 (160 x 120 x 140)	6.06 x 4.69 x 5.24 (154 x 114 x 133)	5.87 x 3.46 (149 x 88)	5.00 (127)	4.76 (121)	3.58 (91)	1.23 lbs.	BPB1612P
ST201275W	7.87 x 4.72 x 2.95 (200 x 120 x 75)	7.64 x 4.69 x 2.68 (194 x 114 x 68)	7.40 x 3.46 (188 x 88)	2.44 (62)	6.30 (160)	3.54 (90)	0.93 lbs.	BPB2012P
ST201290W	7.87 x 4.72 x 3.54 (200 x 120 x 90)	7.64 x 4.69 x 3.27 (194 x 114 x 83)	7.40 x 3.46 (188 x 88)	3.03 (77)	6.30 (160)	3.54 (90)	1.05 lbs.	BPB2012P
ST201510W	7.87 x 5.91 x 3.94 (200 x 150 x 100)	7.64 x 5.67 x 3.70 (194 x 144 x 94)	7.40 x 3.46 (188 x 119)	3.50 (89)	6.30 (160)	4.65 (118)	1.26 lbs.	BPB2015P
STC201513W	7.87 x 5.91 x 4.92 (200 x 150 x 125)	7.64 x 5.67 x 4.69 (194 x 144 x 119)	7.40 x 3.46 (188 x 119)	4.25 (108)	6.30 (160)	4.65 (118)	1.52 lbs.	BPB2015P
ST251690W	9.84 x 6.30 x 3.54 (250 x 160 x 90)	9.61 x 6.06 x 3.31 (244 x 154 x 84)	9.37 x 5.12 (238 x 130)	3.11 (79)	8.35 (212)	5.12 (130)	1.41 lbs.	BPB2516P
ST251611W	9.84 x 6.30 x 4.53 (250 x 160 x 115)	9.61 x 6.06 x 4.29 (244 x 154 x 109)	9.37 x 5.12 (238 x 130)	4.09 (104)	8.39 (213)	5.12 (130)	1.88 lbs.	BPB2516P
ST251612W	9.84 x 6.30 x 4.72 (250 x 160 x 120)	9.61 x 6.06 x 4.49 (244 x 154 x 114)	9.37 x 5.12 (238 x 130)	4.29 (109)	8.35 (212)	5.12 (130)	1.78 lbs.	BPB2516P
ST251615W	9.84 x 6.30 x 5.91 (250 x 160 x 150)	9.61 x 6.06 x 5.67 (244 x 154 x 144)	9.37 x 5.12 (238 x 130)	5.47 (139)	8.35 (212)	5.12 (130)	2.14 lbs.	BPB2516P

Clear Cover

CONFIGURATION
4 cover screws, lift off cover W

W Construction

Material (Box & Cover)	Polycarbonate
Gasket Material	Poured polyurethane seamless gasket
Cover Screw Material	304 Stainless Steel
Cover Screw Size	Various
Cover Screw Torque	M4: 9 - 17 in.-lbs., M6: 17-22 in.-lbs.
Color	Available standard in RAL 7035

W Modifications

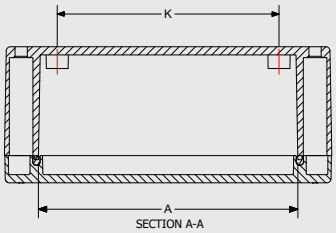
Silk Screening	pg. 21-22
Custom Cutouts/Holes	pg. 21-22

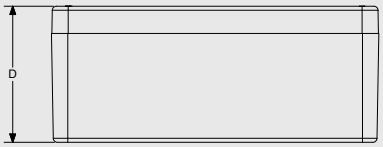
W Industry Standards

NEMA 250, cULus Listed **UL50, UL50e, UL508A**	File # E64358 Type 1, 3R, 4, 4X, 12
IEC 60529 Ratings	IP66 Per UL File# E362920
Temperature Range	(-40°F to +212°F) (-40°C to +100°C)
Flammability Rating	UL94-V2
Self Extinguishing	Non-Halogenated
Chemical Resistance	See chart pg. 198-204
Outdoor Exposure (UL 746C)	(f1) Rated

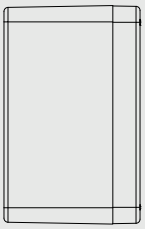
W Accessories

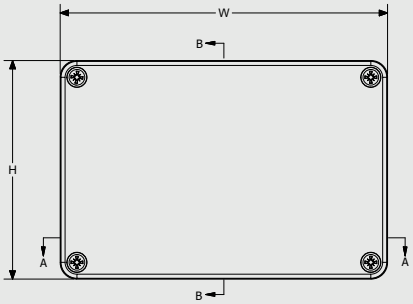
PANELS	**Phenolic Resin Hard Paper Back Panel**	BPB__P	pg. 177
	All Other Accessories		pg. 184-194

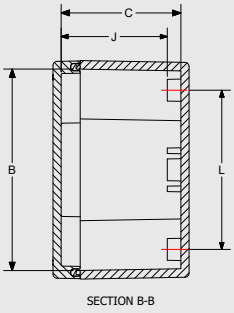


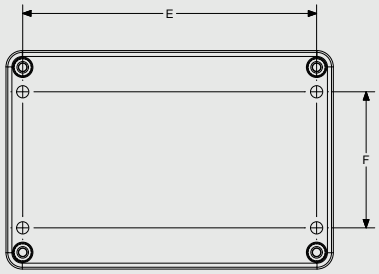


NOTES:
1. CATALOG DRAWING IS FOR REFERENCE ONLY
2. SEE ACTUAL PART DRAWING FOR SPECIFIC DESIGN
3. SOME SIZES HAVE (2) COVER SCREWS;
   SOME SIZES HAVE (4) COVER SCREWS;
   SOME SIZES HAVE (6) COVER SCREWS
4. MOUNTING BOSSES ALSO CHANGE BETWEEN PARTS
5. NOTE J DIMENSION IS WITHOUT BACK PANEL INSTALLED









SCREW SIZES & TORQUE VALUES

PRODUCT SIZES	BACK PANEL SCREW SIZE	BACK PANEL RECOMMENDED TORQUE	COVER SCREW SIZE	COVER SCREW RECOMMENDED TORQUE	RECOMMENDED MOUNTING FLANGE TORQUE
All Sizes	Plastite 48 #8	12-16 IN-LBS	M4	9-17 IN - LBS	25-30 IN-LBS
All Sizes	Plastite 48 #8	12-16 IN-LBS	M6	17-22 IN-LBS	25-30 IN-LBS

Starke Series – Clear Cover

CATALOG NUMBER	OVERALL H X W X D	INSIDE A X B X C	MOUNTING E X F	J	K	L	SHIP WEIGHT	PANEL NUMBER
STCC060555W	2.56 x 1.97 x 2.17 (65 x 50 x 55)	2.36 x 1.77 x 1.93 (60 x 45 x 49)	2.07 x 1.50 (53 x 38)	1.73 (44)	1.50 (38)	N/A	0.18 lbs.	BPB0605P
STCC090603W	3.86 x 2.52 x 1.46 (98 x 64 x 37)	3.54 x 2.20 x 1.93 (90 x 56 x 49)	3.39 x 2.05 (86 x 52)	1.10 (28)	3.19 (81)	N/A	0.25 lbs.	N/A
STCC080805W	3.23 x 3.15 x 2.17 (82 x 80 x 55)	3.03 x 2.95 x 1.93 (77 x 75 x 49)	2.76 x 1.97 (70 x 50)	1.73 (44)	2.28 (58)	2.28 (58)	0.32 lbs.	BPB0808P
STCC128055W	4.72 x 3.15 x 2.17 (120 x 80 x 55)	4.49 x 2.91 x 1.93 (114 x 74 x 49)	4.25 x 1.97 (108 x 50)	1.73 (44)	3.78 (96)	2.32 (59)	0.39 lbs.	BPB1280P
STCC168090W	6.30 x 3.15 x 3.54 (160 x 80 x 90)	6.10 x 2.91 x 3.31 (155 x 74 x 84)	5.83 x 1.97 (148 x 50)	3.11 (79)	4.80 (122)	2.28 (58)	0.65 lbs.	BPB1680P
STCC121275W	4.80 x 4.72 x 2.95 (122 x 120 x 75)	4.57 x 4.49 x 2.72 (116 x 114 x 69)	4.33 x 3.54 (110 x 90)	2.52 (64)	3.31 (84)	3.86 (98)	0.65 lbs.	BPB1212P

Starke Series – Clear Cover

CATALOG NUMBER	OVERALL H X W X D	INSIDE A X B X C	MOUNTING E X F	J	K	L	SHIP WEIGHT	PANEL NUMBER
STCC121211W	4.80 x 4.72 x 4.13 (122 x 120 x 105)	4.57 x 4.49 x 3.94 (116 x 114 x 100)	4.33 x 3.54 (110 x 90)	3.74 (95)	3.31 (84)	3.86 (98)	0.76 lbs.	BPB1212P
STCC161255W	6.30 x 4.72 x 2.17 (160 x 120 x 55)	6.06 x 4.69 x 1.93 (154 x 114 x 49)	5.87 x 3.46 (149 x 88)	1.65 (42)	4.76 (121)	3.58 (91)	0.63 lbs.	BPB1612P
STCC161290W	6.30 x 4.72 x 3.54 (160 x 120 x 90)	6.06 x 4.69 x 3.31 (154 x 114 x 84)	5.87 x 3.46 (149 x 88)	3.03 (77)	4.76 (121)	3.58 (91)	0.84 lbs.	BPB1612P
STCC161214W	6.30 x 4.72 x 5.51 (160 x 120 x 140)	6.06 x 4.69 x 5.24 (154 x 114 x 133)	5.87 x 3.46 (149 x 88)	5.00 (127)	4.76 (121)	3.58 (91)	1.23 lbs.	BPB1612P
STCC201275W	7.87 x 4.72 x 2.95 (200 x 120 x 75)	7.64 x 4.69 x 2.68 (194 x 114 x 68)	7.40 x 3.46 (188 x 88)	2.44 (62)	6.30 (160)	3.54 (90)	0.93 lbs.	BPB2012P
STCC201510W	7.87 x 5.91 x 3.94 (200 x 150 x 100)	7.64 x 5.67 x 3.70 (194 x 144 x 94)	7.40 x 3.46 (188 x 119)	3.50 (89)	6.30 (160)	4.65 (118)	1.26 lbs.	BPB2015P
STCC201513W	7.87 x 5.91 x 4.92 (200 x 150 x 125)	7.64 x 5.67 x 4.69 (194 x 144 x 119)	7.40 x 3.46 (188 x 119)	4.25 (108)	6.30 (160)	4.65 (118)	1.52 lbs.	BPB2015P
STCC251612W	9.84 x 6.30 x 4.72 (250 x 160 x 120)	9.61 x 6.06 x 4.49 (244 x 154 x 114)	9.37 x 5.12 (238 x 130)	4.29 (109)	8.35 (212)	5.12 (130)	1.78 lbs.	BPB2516P
STCC251615W	9.84 x 6.30 x 5.91 (250 x 160 x 150)	9.61 x 6.06 x 5.67 (244 x 154 x 144)	9.37 x 5.12 (238 x 130)	5.47 (139)	8.35 (212)	5.12 (130)	2.14 lbs.	BPB2516P

CF & F Series

CF & F Series

The **CF and F Series** is built around three enclosure designs. All feature a slim style with flush side walls, while the F Series features an overhang cover style. Two are designed from fiberglass reinforced polyester the third from polycarbonate and feature a continuous polyurethane gasket that provides a complete environmental seal.

These enclosures are ideal for compact or portable control or simply as a small junction box. This streamlined series features unobstructed sidewalls, captive cover screws and a full range of sizes.

The F Series features a small overhang cover but also adds back panel mounting capabilities.

CF and F Series enclosures are designed for general electrical and electronic applications and any application that has associated environmental concerns.

Product Configurations

CF SERIES	CF SERIES POLYCARBONATE	F SERIES
CF	CFPC	F
4 COVER SCREWS, LIFT OFF COVER	4 COVER SCREWS, LIFT OFF COVER	4 COVER SCREWS, LIFT OFF COVER

Attributes

- Memory retaining continuous polyurethane gasket
- Captive stainless steel cover screws
- Chemically resistant fiberglass reinforced polyester
- Submersible, non-corrosion environmental design
- High impact resistance
- Polycarbonate option available on select sizes

Industry Standards

NEMA 250, UL Listed UL50, UL50e, UL508A	File E64358 Type 1, 3R, 4X, 6P, 12
CSA Std C22.2	File LR069014 Type 1, 3R, 4X, 6P, 12
IEC 60529	UL File E362920 IP 66, IP67, IP68
UL1741	File E333478 (Fiberglass only)
Plenium Space (UL2043)	Yes (Fiberglass only)
Temperature Range (Fiberglass)	(-76°F to +274°F) (-60°C to +134°C)
Temperature Range (Polycarbonate)	(-40°F to +248°F) (-40°C to +120°C)
Flammability Rating	UL94-5V
Impact Rating	IK10 (Fiberglass only)
Self Extinguishing	Non-halogenated, non-flame propagating
Chemical Resistance	Full chemical resistance charts listed in appendix
NFPA No. 101 Flame Spread	Class A (1)
Outdoor UV Exposure (UL746C)	(f1) Rated

CF Series

CONFIGURATION
4 cover screws, lift off cover

CF Construction

Material	SolarGuard® – Hot compression molded fiberglass reinforced polyester (thermoset)
Gasket	Poured polyurethane seamless gasket provides watertight, dust-tight environmental seal
Cover Screws	Recessed captive stainless steel screws
Stainless Steel Hardware	300 Series stainless used on all external hardware
Enclosure Mounting	Mounting wells located under the cover/outside the gasket area
Soft Edge Design	Rounded edges, minimal protrusions or exposed pocket areas for assembly of dust and debris
Color	Available in standard glacier grey (Pantone 428C)

CF Modifications

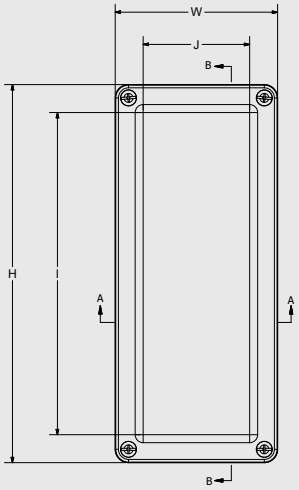
Custom Colors	pg. 21-22
Silk Screening	pg. 21-22
EMI/RFI Shielding	pg. 21-22
Custom Window	pg. 21-22
Custom Cutouts/Holes	pg. 21-22

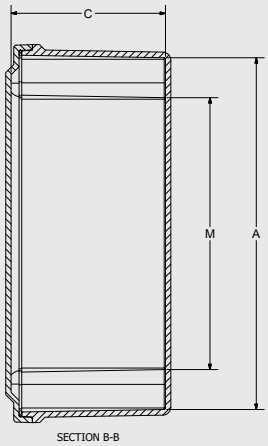
CF Industry Standards

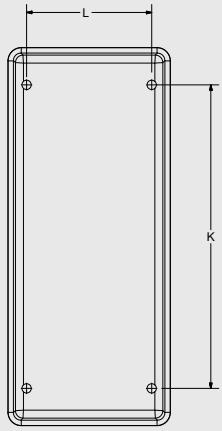
NEMA 250, UL Listed **UL50, UL50e, UL508A**	File E64358 Type 1, 3R, 4X, 6P, 12
CSA Std 22.2	File LR069014 Type 1, 3R, 4X, 6P, 12
IEC 60529	UL File E362920 IP 66, IP67, IP68
UL1741	File E333478
Plenum Space (UL2043) Compliant	Yes
Temperature Range	(-76°F to +274°F) (-60°C to +134°C)
Flammability Rating	UL94-5V
Impact Rating	IK10
Self Extinguishing	Non-halogenated, non-flame propagating
Chemical Resistance	Full chemical resistance charts listed in appendix
NFPA No. 101 Flame Spread	Class A (1)
Outdoor Exposure (UL746C)	(f1) Rated

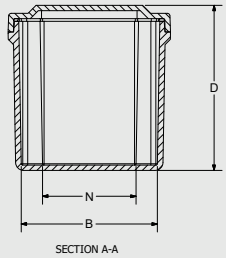
CF Accessories

BACK PANELS	**Aluminum**	BP_AL	pg. 174-175
	Fiberglass	BP_FG	pg. 174-175
	Stainless Steel	BP_SS	pg. 174-175
	Carbon Steel	BP_CS	pg. 174-175









NOTES:
1. CATALOG DRAWING IS FOR REFERENCE ONLY
2. SEE ACTUAL PART DRAWING FOR SPECIFIC DESIGN

SCREW SIZES & TORQUE VALUES

PRODUCT SIZES	BACK PANEL SCREW SIZE	BACK PANEL RECOMMENDED TORQUE	COVER SCREW SIZE	COVER SCREW RECOMMENDED TORQUE	RECOMMENDED MOUNTING FLANGE TORQUE
All Sizes – CF Series	N/A	N/A	#10-24 x 3/4	20 - 24 in-lbs	45 in-lbs max

CF Series

CATALOG NUMBER	OVERALL H X W X D	INSIDE A X B X C	I	J	K	L	M	N	SHIP WEIGHT
*CF332	3.72 x 3.63 x 2.95 (95 x 92 x 75)	3.13 x 3.03 x 2.70 (79 x 77 x 69)	0 (0)	0 (0)	2.31 (59)	2.75 (70)	1.59 (40)	2.03 (52)	0.9 lbs. (112)
CF532	5.97 x 3.63 x 3.14 (152 x 92 x 80)	5.38 x 3.03 x 2.87 (137 x 77 x 73)	4.72 (120)	2.38 (61)	4.56 (116)	2.75 (70)	3.84 (98)	2.03 (52)	1.2 lbs. (169)
CF644	6.63 x 3.81 x 3.89 (168 x 97 x 99)	6.00 x 3.19 x 3.63 (153 x 81 x 92)	5.31 (135)	2.50 (64)	4.88 (124)	2.94 (75)	4.13 (105)	2.19 (56)	1.5 lbs. (186)
CF832	8.41 x 3.63 x 3.14 (214 x 92 x 80)	7.82 x 3.03 x 2.87 (199 x 77 x 73)	7.16 (182)	2.38 (60)	7.00 (178)	2.75 (70)	6.28 (160)	2.03 (52)	1.5 lbs. (231)
CF844	8.88 x 3.81 x 3.89 (225 x 97 x 99)	8.26 x 3.19 x 3.63 (210 x 81 x 92)	7.56 (192)	2.50 (64)	7.13 (181)	2.94 (75)	6.38 (162)	2.19 (56)	1.8 lbs. (243)
CF932	9.35 x 3.63 x 3.14 (237 x 92 x 80)	8.75 x 3.03 x 2.87 (222 x 77 x 73)	8.10 (206)	2.38 (60)	7.94 (202)	2.75 (70)	7.22 (183)	2.03 (52)	1.6 lbs. (256)
CF1144	11.13 x 3.81 x 3.89 (283 x 97 x 99)	10.51 x 3.19 x 3.63 (267 x 81 x 92)	9.81 (249)	2.50 (64)	9.37 (238)	2.94 (75)	8.63 (219)	2.19 (56)	2.1 lbs. (300)
CF1432	13.78 x 3.63 x 3.14 (350 x 92 x 80)	13.19 x 3.03 x 2.87 (335 x 77 x 73)	12.53 (318)	2.38 (60)	12.37 (314)	2.75 (70)	11.66 (296)	2.03 (52)	2.1 lbs. (368)
CF1732	17.35 x 3.63 x 3.14 (441 x 92 x 80)	16.75 x 3.03 x 2.87 (426 x 77 x 73)	16.10 (409)	2.38 (60)	15.94 (405)	2.75 (70)	15.22 (387)	2.03 (52)	2.8 lbs. (458)

All measures are in inches, items in parentheses are in millimeters.

*Flat Cover

Polycarbonate CF Series

CFPC

CONFIGURATION
4 cover screws, lift off cover

CFPC Construction

Material	Polycarbonate with UV inhibitors
Gasket	Poured polyurethane seamless gasket provides watertight, dust-tight environmental seal
Cover Screws	Recessed captive stainless steel screws
Stainless Steel Hardware	300 Series stainless used on all external hardware
Enclosure Mounting	Mounting wells located under the cover/outside the gasket area
Soft Edge Design	Rounded edges, minimal protrusions or exposed pocket areas for assembly of dust and debris
Color	Available in standard RAL 7541C

CFPC Modifications

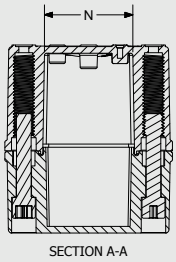
Custom Colors	pg. 21-22
Silk Screening	pg. 21-22
EMI/RFI Shielding	pg. 21-22
Custom Window	pg. 21-22
Custom Cutouts/Holes	pg. 21-22

CFPC Industry Standards

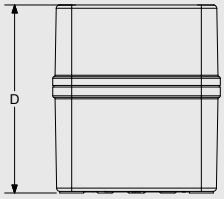
NEMA 250, cULus Listed UL50, UL50e, UL508A	File E64358 Type 1, 3R, 4X, 6P, 12
IEC 60529	UL File E362920 IP 66, IP67, IP68
UL1741	File E333478
Plenum Space (UL2043) Compliant	Yes
Temperature Range	(-40°F to +248°F) (-40°C to +120°C)
Flammability Rating	UL94-5V
Self Extinguishing	Non-halogenated, non-flame propagating
Chemical Resistance	Full chemical resistance charts listed in appendix
NFPA No. 101 Flame Spread	Class A (1)
Outdoor Exposure UL746C	(f1) Rated

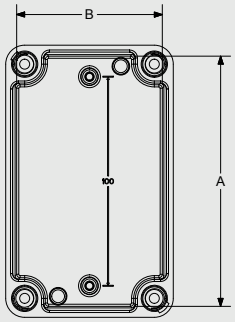
CFPC Accessories

BACK PANELS	**Aluminum**	BP_AL	pg. 174-175
	Fiberglass	BP_FG	pg. 174-175
	Stainless Steel	BP_SS	pg. 174-175
	Carbon Steel	BP_CS	pg. 174-175



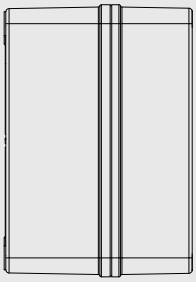
SECTION A-A

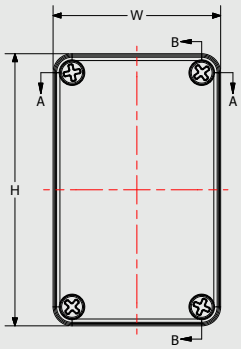


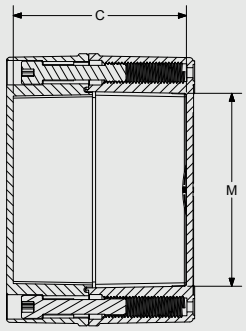


BOX DETAIL
FRONT VIEW

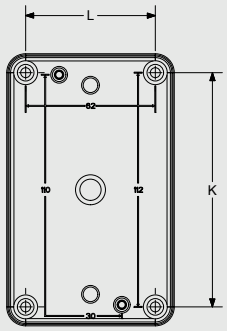
NOTES:
1. CATALOG DRAWING IS FOR REFERENCE ONLY
2. SEE ACTUAL PART DRAWING FOR SPECIFIC DESIGN







SECTION B-B



SCREW SIZES & TORQUE VALUES

PRODUCT SIZES	BACK PANEL SCREW SIZE	BACK PANEL RECOMMENDED TORQUE	COVER SCREW SIZE	COVER SCREW RECOMMENDED TORQUE	RECOMMENDED MOUNTING FLANGE TORQUE
All Sizes – CFPC Series	N/A	N/A	Custom Screw	16-20 in-lbs	25 - 30 in-lbs

CFPC Series

CATALOG NUMBER	HOLE CONFIG.	OVERALL H X W X D	INSIDE A X B X C	K	L	M	N	P	HOLE DIA.	SHIP WEIGHT
CFPC432	Blank	4.34 x 3.16 x 2.79 (110 x 80 x 71)	3.92 x 2.74 x 2.51 (100 x 70 x 64)	3.62 (92)	2.44 (62)	2.85 (72)	1.66 (42)	NA	NA	CF
CFPC533	Blank	5.12 x 3.16 x 3.54 (130 x 80 x 90)	7.71 x 2.74 x 3.26 (130 x 80 x 90)	4.41 (112)	2.44 (62)	3.63 (92)	1.66 (42)	NA	NA	CF

All measures are in inches, items in parentheses are in millimeters.

*Flat Cover

F Series

F **CONFIGURATION**
4 cover screws, lift off cover

F Construction

Material	SolarGuard® – Hot compression molded fiberglass reinforced polyester (thermoset)
Gasket	Poured polyurethane seamless gasket provides watertight, dust-tight environmental seal
Cover screws	Captive stainless steel screws
Stainless Steel Hardware	300 Series stainless used on all external hardware
Enclosure Mounting	Mounting wells located under the cover/outside the gasket area.
Panel Mounting	Raised bosses with brass inserts accepting 10-32 screws for optional panel mounting
Soft Edge Design	Rounded edges, minimal protrusions or exposed pocket areas for assembly of dust and debris
Color	Available in standard glacier grey (Pantone 428C)

F Modifications

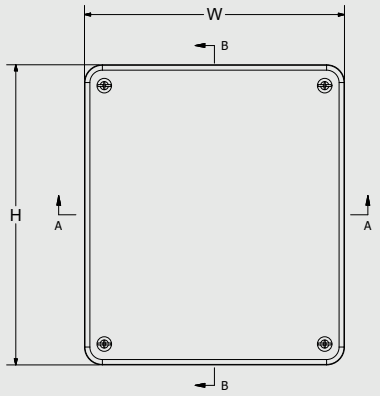
Custom Colors	pg. 21-22
Silk Screening	pg. 21-22
EMI/RFI Shielding	pg. 21-22
Custom Window	pg. 21-22
Custom Cutouts/Holes	pg. 21-22

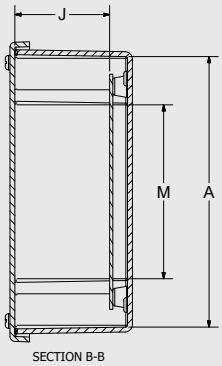
F Industry Standards

NEMA 250, UL Listed **UL50, UL50e, UL508A**	File E64358 Type 1, 3R, 4X, 6P, 12
CSA Std 22.2	File LR069014 Type 1, 3R, 4X, 6P, 12
IEC 60529	UL File E362920 IP 66, IP67, IP68
UL1741	File E333478
Plenum Space (UL2043) Compliant	Yes
Temperature Range	(-76° F to +274° F) (-60° C to +134° C)
Flammability Rating	UL94-5V
Impact Rating	IK10
Self Extinguishing	Non-haloginated, non-flame propagating
Chemical Resistance	Full chemical resistance charts listed in appendix
NFPA No. 101 Flame Spread	Class A (1)
Outdoor Exposure UL746C	(f1) Rated

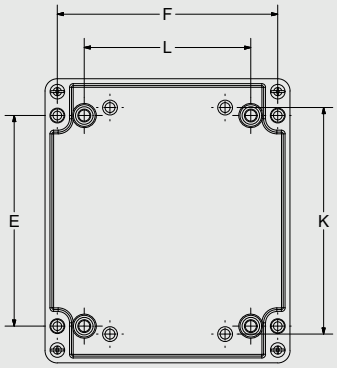
F Accessories

BACK PANELS	**Aluminum**	BP_AL	pg. 174-175
	Fiberglass	BP_FG	pg. 174-175
	Stainless Steel	BP_SS	pg. 174-175
	Carbon Steel	BP_CS	pg. 174-175

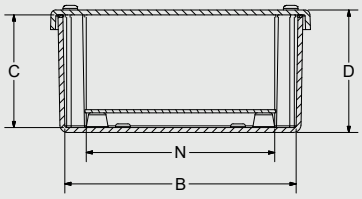




SECTION B-B



FRONT VIEW
WITHOUT COVER



SECTION A-A

NOTES:
1. CATALOG DRAWING IS FOR REFERENCE ONLY
2. SEE ACTUAL PART DRAWING FOR SPECIFIC DESIGN
3. NOTE "J" DIMENSION IS WITH 0.080" THICK BACK PANEL INSTALLED
4. BACK PANEL IS SOLD SEPARATELY

SCREW SIZES & TORQUE VALUES

PRODUCT SIZES	BACK PANEL SCREW SIZE	BACK PANEL RECOMMENDED TORQUE	COVER SCREW SIZE	COVER SCREW RECOMMENDED TORQUE	RECOMMENDED MOUNTING FLANGE TORQUE
All Sizes	N/A	N/A	#10-24 x 3/4	20 - 24 in-lbs	45 in-lbs max

F Series

CATALOG NUMBER	OVERALL H X W X D	INSIDE A X B X C	MOUNTING E X F	J	K	L	M	N	SHIP WEIGHT	PANEL NUMBER
F763	7.63 x 6.63 x 3.19 (194 x 168 x 81)	6.90 x 5.90 x 2.88 (175 x 150 x 73)	5.37 x 5.63 (137 x 143)	2.48 (63)	5.37 (137)	4.25 (108)	4.52 (115)	4.9 (124)	2.5 lbs.	BP76*
F963	9.87 x 6.63 x 3.19 (251 x 168 x 81)	9.15 x 5.90 x 2.88 (232 x 150 x 73)	7.62 x 5.63 (194 x 143)	2.48 (63)	7.62 (194)	4.25 (108)	6.77 (172)	4.9 (124)	2.6 lbs.	BP96*

All measures are in inches, items in parentheses are in millimeters.

**Panel sold separately*

NewSentry® Series

NewSentry® Series

The **NewSentry® Series** is a range of corrosion resistant, watertight PVC enclosures featuring ten sizes of simple screw down covers. The enclosures are a perfect complement to our non-metallic offering when used as junction boxes and small auxiliary enclosures.

Each enclosure is assembled with a PVC gasket that ensures compatibility with the enclosure's substrate and, through cellular resiliency in stretching and compressing, enables longevity in the interaction between cover and gasket spanning a wide potential temperature range.

Mounting feet are integral on smaller sizes and included as bolt-ons with all larger enclosures. Captive brass cover screws meet threaded brass inserts to secure covers and provide assurance against wear and tear from repeated use.

NewSentry® Series enclosures are designed for general electrical and electronic applications and any application that has associated environmental concerns.

Attributes

- → Memory retaining seamless PVC gasket
- → Threaded inserts and captive brass cover screws
- → Corrosion resistant PVC material
- → Integral mounting feet available on some models

Industry Standards

NEMA 250, UL Listed UL50, UL50e, UL508A	File E190960 Type 1, 2, 3, 4, 4X, 12, 13
CSA Std C22.2 No. 85	File 207025 Type 1, 2, 3, 4, 4X, 12, 13
Temperature Range	(-4°F to +140°F) (-20°C to +60°C)
Flammability Rating	UL94-V0
Self Extinguishing	Non-flame propagating
Chemical Resistance	Full chemical resistance charts listed in appendix

Product Configurations

NEWSENTRY® SERIES

PVC

4 COVER SCREWS, LIFT OFF COVER

PVC

PVC

CONFIGURATION
4 cover screws, lift off cover

PVC Construction

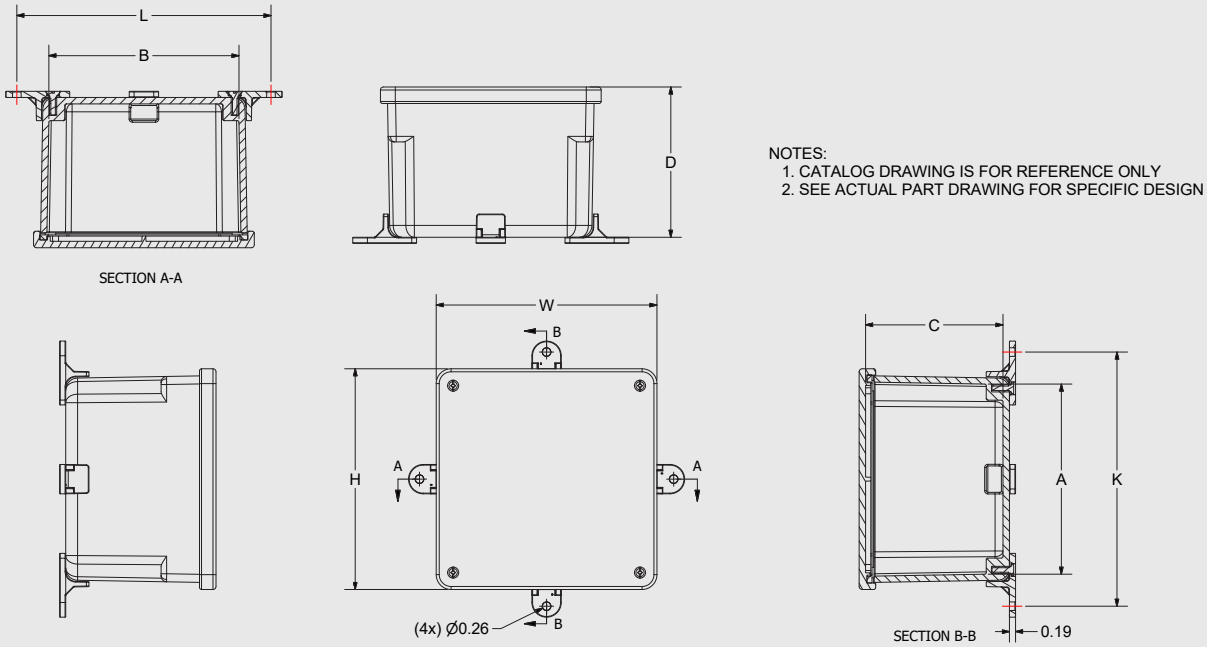
Material	Polyvinyl chloride (PVC)
Gasket	PVC seamless gasket provides watertight, dust-tight environmental seal
Brass Screws	Screw down to brass inserts
Mounting Feet	Built in on designated models. Add on feet available for other models
Soft Edge Design	Rounded edges, minimal protrusions or exposed pocket areas for assembly of dust and debris

PVC Modifications

Silk Screening	pg. 21-22
Custom Cutouts/Holes	pg. 21-22

PVC Industry Standards

NEMA 250, UL Listed **UL50, UL50e, UL508A**	File E190960 Type 1, 2, 3, 4, 4X, 12, 13
CSA Std C22.2 No. 85	File 207025 Type 1, 2, 3, 4, 4X, 12, 13
Temperature Range	(-4°F to +140°F) (-20°C to +60°C)
Flammability Rating	UL94-V0
Self Extinguishing	Non-flame propagating
Chemical Resistance	Full chemical resistance charts listed in appendix



NOTES:
1. CATALOG DRAWING IS FOR REFERENCE ONLY
2. SEE ACTUAL PART DRAWING FOR SPECIFIC DESIGN

SCREW SIZES & TORQUE VALUES

PRODUCT SIZES	BACK PANEL SCREW SIZE	BACK PANEL RECOMMENDED TORQUE	COVER SCREW SIZE	COVER SCREW RECOMMENDED TORQUE	MOUNTING FOOT SCREW SIZE	MOUNTING FOOT SCREW RECOMMENDED TORQUE
4 x 4 x 2 to 6 x 6 x 6	N/A	N/A	#8-32	16-20 in-lbs	10-16 Hi-Lo	30 in-lbs
8 x 8 x 4 to 12 x 12 x 6	N/A	N/A	#8-32	16-20 in-lbs	1/4-15 Hi-Lo	40 in-lbs

NewSentry® Series – PVC

CATALOG NUMBER	OVERALL H X W X D	INSIDE A X B X C	K	L	F	SHIP WEIGHT
J442PVC*	4.03 x 4.03 x 2.42 (102 x 102 x 61)	3.66 x 3.66 x 2.00 (93 x 93 x 51)	4.63 (118)	N/A	8-32	0.60 lbs.
J444PVC	4.04 x 4.04 x 4.50 (103 x 103 x 114)	3.60 x 3.60 x 4.02 (91 x 91 x 102)	5.64 (143)	N/A	8-32	1.11 lbs.
J446PVC	4.02 x 4.02 x 6.58 (102 x 102 x 167)	3.59 x 3.59 x 6.02 (91 x 91 x 153)	5.49 (139)	N/A	8-32	1.40 lbs.
J552PVC*	5.00 x 5.00 x 2.33 (127 x 127 x 59)	4.61 x 4.61 x 1.85 (117 x 117 x 47)	5.66 (144)	N/A	8-32	0.90 lbs.
J664PVC	6.85 x 6.85 x 4.57 (174 x 174 x 116)	5.96 x 5.96 x 4.03 (151 x 151 x 102)	7.94 (202)	7.94 (202)	10.-32	2.12 lbs.
J666PVC	6.85 x 6.85 x 6.58 (174 x 174 x 167)	5.92 x 5.92 x 6.04 (150 x 150 x 153)	7.96 (202)	7.96 (202)	10-32	2.72 lbs.
J884PVC	8.96 x 8.96 x 4.62 (228 x 228 x 117)	8.05 x 8.05 x 4.06 (204 x 204 x 103)	10.49 (266)	10.49 (266)	1/4-20	3.77 lbs.
J887PVC	9.15 x 9.15 x 7.65 (232 x 232 x 195)	8.02 x 8.02 x 7.06 (204 x 204 x 179)	10.49 (266)	10.49 (266)	1/4-20	5.10 lbs.
J12124PVC	12.94 x 12.94 x 4.70 (329 x 329 x 119)	11.92 x 11.92 x 4.00 (303 x 303 x 102)	14.46 (367)	14.46 (367)	1/4-20	8.50 lbs.
J12126PVC	12.94 x 12.94 x 6.64 (329 x 329 x 169)	11.91 x 11.91 x 6.00 (303 x 303 x 152)	14.46 (367)	14.46 (367)	1/4-20	9.25 lbs.

All measures are in inches, items in parentheses are in millimeters.
F = Threaded brass insert size.

**Molded in mounting feet*

Electrical Equipment Manufacturing

"'These Stahlin boxes were chosen instead because they are lighter weight, easier to handle and install, and will hold up better than the stainless steel in this environment.' Facing a challenge in a particularly corrosive environment, Brian's experience with the product shows that the Stahlin enclosure provides ample resistance against corrosion: 'I have been using Stahlin boxes for 8 years and have been pleased with the performance of the enclosures and why Stahlin was chosen for this desalination project.'"

– **Brian,** *Project Manager Leading Electrical and Data Communications Contractor*

Read more at: **stahlin.com/industries**

Operator Interface

PushButton Series

PushButton Series

The **PushButton Series** includes two separate enclosure designs, an in-line style and a multi-hole style configuration. The in-line includes a fiberglass and polycarbonate option while the multi-hole is designed for fiberglass. All feature a continuous polyurethane gasket that provides a complete environmental seal. A full metal grounding strap is furnished with each configuration for ease of bonding.

Designed as a true pushbutton station, the in-line enclosure does not offer a provision for panel mounting. Unobstructed side-walls, captive stainless steel cover screws and a full range of sizes makes this a versatile offering. These unique in-line enclosures will house pushbuttons, switches and pilot lights in both 30mm and 22mm configurations.

The alternate configuration is the multi-hole design which has a integral flange mount and back panel capabilities. This series is ideal for high density pushbutton mounting and can accommodate up to nine operators on a single cover. This multi-hole design is compatible with 30mm configuration components.

PushButton Series enclosures are designed for general electrical and electronic applications and any application that has associated environmental concerns. Custom hole configurations are available upon request. Please consult factory.

Product Configurations

30MM IN-LINE	22MM IN-LINE	30MM MULTI-HOLE	POLYCARBONATE 30MM; 22MM
CF	CF	F	CFPC
4 COVER SCREWS, LIFT OFF COVER	4 COVER SCREWS, LIFT OFF COVER	4 COVER SCREWS, LIFT OFF COVER	4 COVER SCREWS, LIFT OFF COVER

Attributes

- Flush cover design
- Memory retaining continuous polyurethane gasket
- Captive cover screws
- Full metal grounding strap (strap included on fiberglass only)
- Notched key hole design
- Chemically resistant Non-Metallic materials
- Non-corrosion environmental design
- Available in 30mm and 22mm configurations

Industry Standards

NEMA 250, UL Listed UL50, UL50e, UL508A	File E64358 Type 1, 3, 4X, 6P, 12
CSA Std 22.2	File LR069014 Type 1, 3, 4X, 6P, 12
IEC 60529	UL File E362920 IP 66, IP67, IP68
Plenum Space (UL2043) Compliant	Yes
Temperature Range (Fiberglass)	(-76°F to +274°F) (-60°C to +134°C)
Temperature Range (Polycarbonate)	(-40°F to + 248°F) (-40°C to + 120°C)
Flammability Rating	UL94-5V
Impact Rating	IK10
Self Extinguishing	Non-halogenated, non-flame propagating
Chemical Resistance	Full chemical resistance charts listed in appendix
NFPA No. 101 Flame Spread	Class A (1)
Outdoor Exposure UL746C	(f1) Rated

30mm In-line

CF **CONFIGURATION**
4 cover screws, lift off cover

CF Construction

Material	SolarGuard® – Hot compression molded fiberglass reinforced polyester (thermoset)
Gasket	Poured polyurethane seamless gasket provides watertight, dust-tight environmental seal
Cover Screws	Recessed captive stainless steel screws
Stainless Steel Hardware	300 Series stainless used on all external hardware
Enclosure Mounting	Mounting wells located under the cover, outside gasket area
Soft Edge Design	Rounded edges, minimal protrusions or exposed pocket areas for assembly of dust and debris
Color	Available standard glacier grey (PMS 428C)

CF Modifications

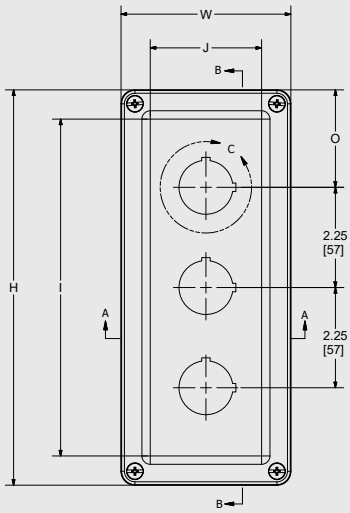
Custom Colors	pg. 21-22
Custom Painting	pg. 21-22
Silk Screening	pg. 21-22
Custom Cutouts/Holes	pg. 21-22

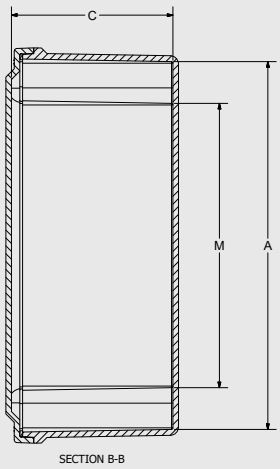
CF Industry Standards

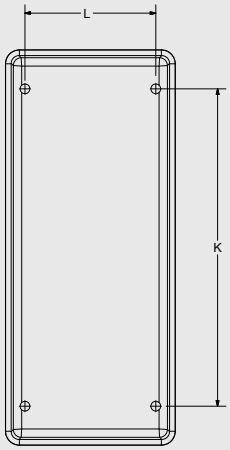
NEMA 250, UL Listed **UL50, UL50e, UL508A**	File E64358 Type 1, 3R, 4X, 6P, 12
CSA Std C22.2	File LR069014 Type 1, 3R, 4X, 6P, 12
IEC 60529	UL File E362920 IP 66, IP67, IP68
Plenum Space (UL2043) Compliant	Yes
Temperature Range	(-76°F to +274°F) (-60°C to +134°C)
Flammability Rating	UL94-5V
Impact Rating	IK10
Self Extinguishing	Non-flame propagating
Chemical Resistance	Full chemical resistance charts listed in appendix
NFPA No. 101 Flame Spread	Class A (1)
Outdoor Exposure UL746C	(f1) Rated

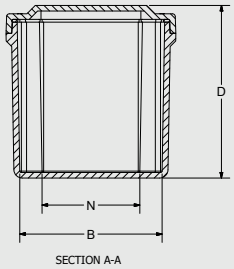
CF Accessories

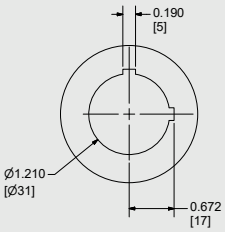
Mounting Feet	pg. 192











NOTES:
1. CATALOG DRAWING IS FOR REFERENCE ONLY
2. SEE ACTUAL PART DRAWING FOR SPECIFIC DESIGN

SCREW SIZES & TORQUE VALUES

PRODUCT SIZES	BACK PANEL SCREW SIZE	BACK PANEL RECOMMENDED TORQUE	COVER SCREW SIZE	COVER SCREW RECOMMENDED TORQUE	RECOMMENDED MOUNTING FLANGE TORQUE
All Sizes	N/A	N/A	#10-24 x 3/4	20 - 24 in-lbs	45 in-lbs max

PushButton Series – 30mm In-line

CATALOG NUMBER	OVERALL H X W X D	INSIDE A X B X C	I	J	K	L	M	N	O	SHIP WEIGHT
CF1PB	6.63 x 3.81 x 3.89 (168 x 97 x 99)	6.00 x 3.19 x 3.63 (153 x 81 x 92)	5.31 (135)	2.5 (64)	4.88 (124)	2.94 (75)	4.13 (105)	2.19 (56)	3.31 (84)	1.5 lbs.
CF2PB	6.63 x 3.81 x 3.89 (168 x 97 x 99)	6.00 x 3.19 x 3.63 (153 x 81 x 92)	5.31 (135)	2.5 (64)	4.88 (124)	2.94 (75)	4.13 (105)	2.19 (56)	2.19 (56)	1.5 lbs.
CF3PB	8.88 x 3.81 x 3.89 (225 x 97 x 99)	8.26 x 3.19 x 3.63 (210 x 81 x 92)	7.56 (192)	2.5 (64)	7.13 (181)	2.94 (75)	6.38 (162)	2.19 (56)	2.19 (56)	1.8 lbs.
CF4PB	11.13 x 3.81 x 3.89 (283 x 97 x 99)	10.51 x 3.19 x 3.63 (267 x 81 x 92)	9.81 (249)	2.5 (64)	9.37 (238)	2.94 (75)	8.63 (219)	2.19 (56)	2.19 (56)	2.0 lbs.
CF5PB	13.78 x 3.63 x 3.14 (350 x 92 x 80)	13.19 x 3.03 x 2.87 (335 x 77 x 73)	12.53 (318)	2.38 (60)	12.37 (314)	2.75 (70)	11.66 (296)	2.03 (52)	2.39 (61)	2.1 lbs.
CF6PB	17.35 x 3.63 x 3.14 (441 x 92 x 80)	16.75 x 3.03 x 2.87 (426 x 77 x 73)	16.1 (409)	2.38 (60)	15.94 (405)	2.75 (70)	15.22 (387)	2.03 (52)	3.05 (77)	3.0 lbs.

All measures are in inches, items in parentheses are in millimeters.
Note: CF3PB shown for reference.

22mm In-line

CF **CONFIGURATION**
4 cover screws, lift off cover

CF Construction

Material	SolarGuard® – Hot compression molded fiberglass reinforced polyester (thermoset)
Gasket	Poured polyurethane seamless gasket provides watertight, dust-tight environmental seal
Cover Screws	Recessed captive stainless steel screws
Stainless Steel Hardware	300 Series stainless used on all external hardware
Enclosure Mounting	Mounting wells located under the cover, outside gasket area
Soft Edge Design	Rounded edges, minimal protrusions or exposed pocket areas for assembly of dust and debris
Color	Available standard glacier grey (PMS 428C)

CF Modifications

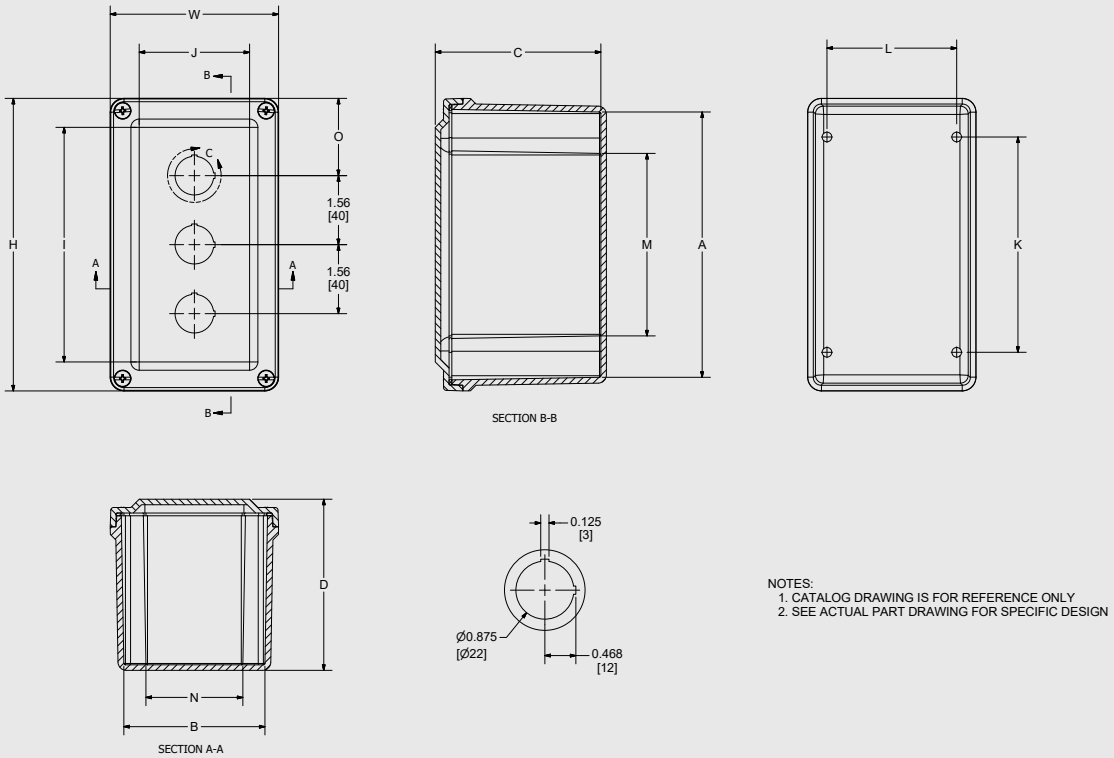
Custom Colors	pg. 21-22
Custom Painting	pg. 21-22
Silk Screening	pg. 21-22
Custom Cutouts/Holes	pg. 21-22

CF Industry Standards

NEMA 250, UL Listed **UL50, UL50e, UL508A**	File E64358 Type 1, 3R, 4X, 6P, 12
CSA Std C22.2	File LR069014 Type 1, 3R, 4X, 6P, 12
IEC 60529	UL File E362920 IP 66, IP67, IP68
Plenum Space (UL2043) Compliant	Yes
Temperature Range	(-76°F to +274°F) (-60°C to +134°C)
Flammability Rating	UL94-5V
Impact Rating	IK10
Self Extinguishing	Non-flame propagating
Chemical Resistance	Full chemical resistance charts listed in appendix
NFPA No. 101 Flame Spread	Class A (1)
Outdoor Exposure UL746C	(f1) Rated

CF Accessories

Mounting Feet	pg. 192



NOTES:
1. CATALOG DRAWING IS FOR REFERENCE ONLY
2. SEE ACTUAL PART DRAWING FOR SPECIFIC DESIGN

SCREW SIZES & TORQUE VALUES

PRODUCT SIZES	BACK PANEL SCREW SIZE	BACK PANEL RECOMMENDED TORQUE	COVER SCREW SIZE	COVER SCREW RECOMMENDED TORQUE	RECOMMENDED MOUNTING FLANGE TORQUE
All Sizes	N/A	N/A	#10-24 x 3/4	20 - 24 in-lbs	45 in-lbs max

PushButton Series – 22mm In-line

CATALOG NUMBER	OVERALL H X W X D	INSIDE A X B X C	I	J	K	L	M	N	O	SHIP WEIGHT
CF1PB22	6.63 x 3.81 x 3.89 (168 x 97 x 99)	6.00 x 3.19 x 3.63 (153 x 81 x 92)	5.31 (135)	2.5 (64)	4.88 (124)	2.94 (75)	4.13 (105)	2.19 (56)	3.31 (84)	1.6 lbs.
CF2PB22	6.63 x 3.81 x 3.89 (168 x 97 x 99)	6.00 x 3.19 x 3.63 (153 x 81 x 92)	5.31 (135)	2.5 (64)	4.88 (124)	2.94 (75)	4.13 (105)	2.19 (56)	2.53 (64)	1.6 lbs.
CF3PB22	6.63 x 3.81 x 3.89 (168 x 97 x 99)	6.00 x 3.19 x 3.63 (153 x 81 x 92)	5.31 (135)	2.5 (64)	4.88 (124)	2.94 (75)	4.13 (105)	2.19 (56)	1.75 (44)	1.6 lbs.
CF4PB22	8.88 x 3.81 x 3.89 (225 x 97 x 99)	8.26 x 3.19 x 3.63 (210 x 81 x 92)	7.56 (192)	2.5 (64)	7.13 (181)	2.94 (75)	6.38 (162)	2.19 (56)	2.09 (53)	1.8 lbs.
CF5PB22	11.13 x 3.81 x 3.89 (283 x 97 x 99)	10.51 x 3.19 x 3.63 (267 x 81 x 92)	9.81 (249)	2.5 (64)	9.37 (238)	2.94 (75)	8.63 (219)	2.19 (56)	2.44 (62)	2.1 lbs.
CF6PB22	11.13 x 3.81 x 3.89 (283 x 97 x 99)	10.51 x 3.19 x 3.63 (267 x 81 x 92)	9.81 (249)	2.5 (64)	9.37 (238)	2.94 (75)	8.63 (219)	2.19 (56)	1.66 (42)	2.1 lbs.

All measures are in inches, items in parenthesis are in millimeters.
Note: CF3PB22 shown for reference.

30mm Multi-hole

F **CONFIGURATION**
4 cover screws, lift off cover

F Construction

Material	SolarGuard® – Hot compression molded fiberglass reinforced polyester (thermoset)
Gasket	Poured polyurethane seamless gasket provides watertight, dust-tight environmental seal
Cover screws	Recessed captive stainless steel screws
Stainless Steel Hardware	300 Series stainless used on all external hardware
Enclosure Mounting	Integral mounting flange for ease of mounting
Cover Retention Chain	Stainless steel beaded chain for securing cover after lift off
Panel Mounting	Back panel utilizes threaded brass inserts accepting 10-32 screws. Cover accepting 10-24 screws.
Soft Edge Design	Rounded edges, minimal protrusions or exposed pocket areas for assembly of dust and debris
Color	Available standard glacier grey (PMS 428C)

F Modifications

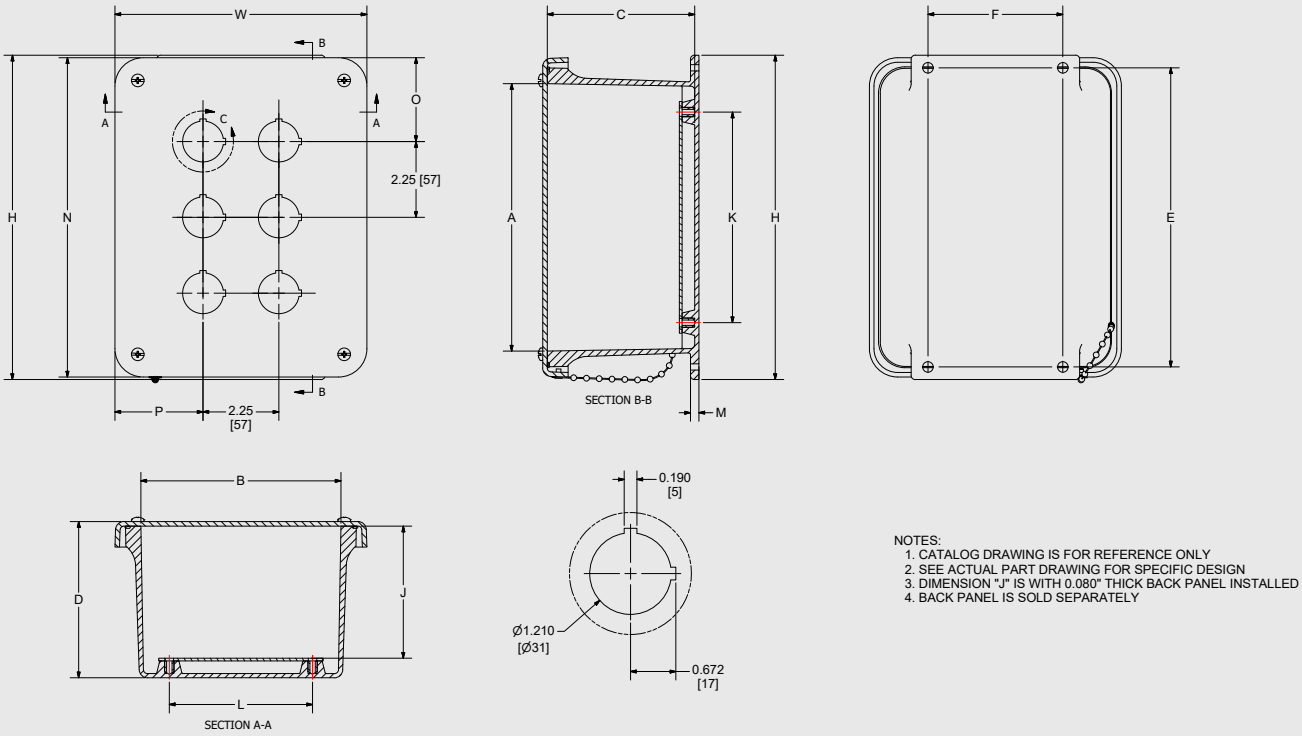
Custom Colors	pg. 21-22
Custom Painting	pg. 21-22
Silk Screening	pg. 21-22
Custom Cutouts/Holes	pg. 21-22

F Industry Standards

NEMA 250, UL Listed UL50, UL50e, UL508A	File E64358 Type 1, 3R, 4X, 6P, 12
CSA Std C22.2	File LR069014 Type 1, 3R, 4X, 6P, 12
IEC 60529	UL File E362920 IP 66, IP67, IP68
Plenum Space (UL2043) Compliant	Yes
Temperature Range	(-76°F to +274°F) (-60°C to +134°C)
Flammability Rating	UL94-5V
Impact Rating	IK10
Self Extinguishing	Non-flame propagating
Chemical Resistance	Full chemical resistance charts listed in appendix
NFPA No. 101 Flame Spread	Class A (1)
Outdoor Exposure UL746C	(f1) Rated

F Accessories

Mounting Feet	pg. 192



NOTES:
1. CATALOG DRAWING IS FOR REFERENCE ONLY
2. SEE ACTUAL PART DRAWING FOR SPECIFIC DESIGN
3. DIMENSION "J" IS WITH 0.080" THICK BACK PANEL INSTALLED
4. BACK PANEL IS SOLD SEPARATELY

SCREW SIZES & TORQUE VALUES

PRODUCT SIZES	BACK PANEL SCREW SIZE	BACK PANEL RECOMMENDED TORQUE	COVER SCREW SIZE	COVER SCREW RECOMMENDED TORQUE	RECOMMENDED MOUNTING FLANGE TORQUE
All Sizes	#10-32 x 3/8	16 - 20 in-lbs	#10-24 x 3/4	20 - 24 in-lbs	45 in-lbs max

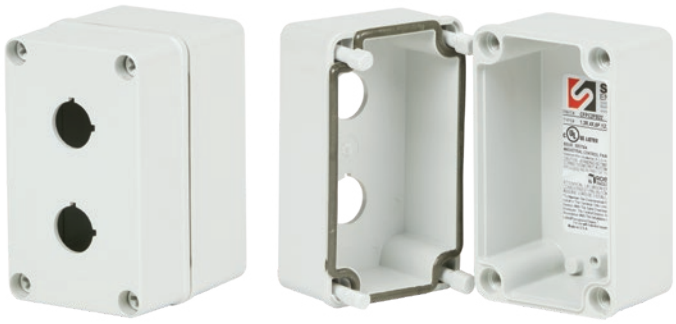
Pushbutton Series – 30mm Multi-hole

CATALOG NUMBER	HOLE CONFIG.	OVERALL H X W X D	INSIDE A X B X C	MOUNTING E X F	J	K	L	M	N	O	P	HOLE DIA.	SHIP WEIGHT	PANEL NUMBER
F4PBW	2 x 2	7.50 x 7.50 x 4.75 (191 x 191 x 121)	5.72 x 5.72 x 4.45 (145 x 145 x 113)	6.75 x 4.00 (171 x 101)	4.00 (101)	4.25 (108)	4.25 (108)	0.25 (6)	7.52 (191)	2.64 (67)	2.64 (67)	0.31 (8)	2.7 lbs.	BP66*
F6PBW	3 x 2	9.62 x 7.50 x 4.74 (244 x 191 x 121)	7.73 x 5.74 x 4.45 (196 x 146 x 113)	8.88 x 4.00 (225 x 101)	4.00 (101)	6.25 (159)	4.25 (108)	0.25 (6)	9.5 (242)	2.64 (67)	2.51 (64)	0.31 (8)	3.5 lbs.	BP86*
F9PBW	3 x 3	11.62 x 9.41 x 4.25 (295 x 239 x 108)	9.73 x 7.73 x 3.98 (247 x 196 x 101)	10.75 x 6.00 (273 x 152)	3.50 (89)	8.25 (209)	6.25 (159)	0.25 (6)	11.35 (288)	3.43 (87)	2.45 (62)	0.31 (8)	5.0 lbs.	BP108*

All measures are in inches, items in parentheses are in millimeters.
Note: F6PBW shown for reference

**Panel sold separately*

Polycarbonate 30mm; 22mm



CFPC

CONFIGURATION
4 cover screws, lift off cover

CFPC Construction

Material (Box & Cover)	Polycarbonate with UV inhibitors
Gasket Material	Poured polyurethane seamless gasket
Cover Screw Material	Custom polycarbonate screw
Cover Screw Size	Custom screw size
Cover Screw Torque	16 in.-lbs
Enclosure Mounting	Mounting wells located under the cover/ outside the gasket area
Soft Edge Design	Rounded edges, minimal protrusions or exposed pocket areas for assembly of dust and debris
Color	Available standard in RAL 7541C

CFPC Modifications

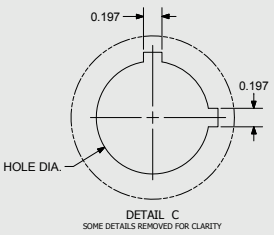
Custom Colors	pg. 21-22
Custom Painting	pg. 21-22
Silk Screening	pg. 21-22
Custom Cutouts/Holes	pg. 21-22

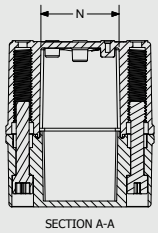
CFPC Industry Standards

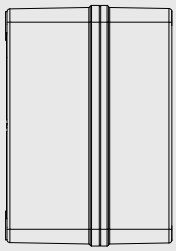
NEMA 250, cULus Listed UL50, UL50e, UL508A	E319779 Type 1, 3R, 4X, 6P, 12
IEC 60529	UL File E362920 IP66, IP67, IP68
Temperature Range	(-40°F to +248°) (-40°C to +120°)
Flammability Rating	UL94-5VA
Chemical Resistance	Full chemical resistance charts listed in appendix
Outdoor Exposure UL 746C	(f1) Rated

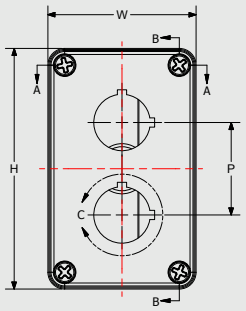
CFPC Accessories

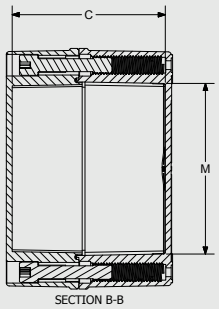
Accessory Kit (Screws)	pg. 191
All Other Accessories	pg. 184-194

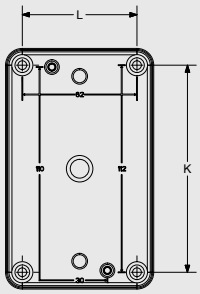


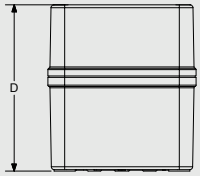


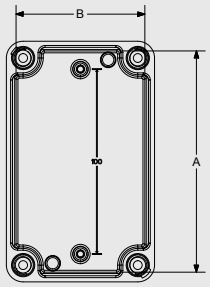












NOTES:
1. CATALOG DRAWING IS FOR REFERENCE ONLY
2. SEE ACTUAL PART DRAWING FOR SPECIFIC DESIGN
3. COVER OPTIONS:
   -1PB - (1) 30 mm DIA. HOLE
   -2PB - (2) 30 mm DIA. HOLES
   -1PB22 - (1) 22 mm DIA. HOLE
   -2PB22 - (2) 22 mm DIA. HOLES

SCREW SIZES & TORQUE VALUES

PRODUCT SIZES	BACK PANEL SCREW SIZE	BACK PANEL RECOMMENDED TORQUE	COVER SCREW SIZE	COVER SCREW RECOMMENDED TORQUE	RECOMMENDED MOUNTING FLANGE TORQUE
All Sizes – CFPC Series	N/A	N/A	Custom Screw	16-20 in-lbs	25 - 30 in-lbs

Pushbutton Series – Polycarbonate 30mm; 22mm

CATALOG NUMBER	HOLE CONFIG.	OVERALL H X W X D	INSIDE A X B X C	K	L	M	N	P	HOLE DIA.	SHIP WEIGHT
CFPC1PB	1	4.34 x 3.16 x 2.79 (110 x 80 x 71)	3.92 x 2.74 x 2.51 (100 x 70 x 64)	3.62 (92)	2.44 (62)	2.85 (72)	1.66 (42)	N/A	1.20 (31)	2 lbs.
CFPC2PB	2	5.12 x 3.16 x 3.54 (130 x 80 x 90)	4.71 x 2.74 x 3.26 (120 x 70 x 83)	4.41 (112)	2.44 (62)	3.63 (92)	1.66 (42)	1.97 (50)	1.20 (31)	2 lbs.
CFPC1PB22	1	4.34 x 3.16 x 2.79 (110 x 80 x 71)	3.92 x 2.74 x 2.51 (100 x 70 x 64)	3.62 (92)	2.44 (62)	2.85 (72)	1.66 (42)	N/A	0.89 (23)	2 lbs.
CFPC2PB22	2	5.12 x 3.16 x 3.54 (130 x 80 x 90)	4.71 x 2.74 x 3.26 (120 x 70 x 83)	4.41 (112)	2.44 (62)	3.63 (92)	1.66 (42)	1.97 (50)	0.89 (23)	2 lbs.

All measures are in inches, items in parentheses are in millimeters.

Disconnect Series

Disconnect Series

Stahlin's **Disconnect Series** offers a unique range of product designed around a Type 4X watertight, corrosion resistant vertical disconnect handle. The versatile mechanism functions as a universal linkage compatible with name brand disconnects, circuit breakers and combination starters.

An environmentally sealed vertical disconnect mechanism differs significantly from a rotary through-the-door mechanism. The assembly maintains the complete environmental integrity of the enclosure while it minimizes panel obstruction. The mechanism mounts to the far right side of the enclosure and minimizes the linkage interference with panel mounted components. As a result, competitively priced, commercially available control can be used. Stahlin's unique handle mechanism uses internal cabinet space in the most efficient way possible. The handle mechanism is unchanged, regardless of the capacity of the control. However, five different enclosure sizes are offered to accommodate both small and large control assemblies.

Attributes

- Environmentally sealed Type 4X disconnect handle
- Safety lock in off position
- Memory retaining polyurethane gasket
- High impact resistance
- 300 series stainless steel
- Stands up to an exceptionally broad range of chemical exposures
- Integral mounting feet
- Molded in panel mounting inserts
- Compatible with rod driven mechanisms only

Industry Standards

NEMA 250, UL Listed UL50, UL50e, UL508A	File E64358SP Type 1, 3, 3R, 4X, 12 as designated
CSA Std C22.2	File LR069014 Type 1, 3, 3R, 4X, 12 as designated
Temperature Range	(-76°F to +274°F) (-60°C to +134°C)
Flammability Rating	UL94-5V
Self Extinguishing	Non-halogenated, non-flame propagating
Chemical Resistance	Full chemical resistance charts listed in appendix
NFPA No. 101 Flame Spread	Class A (1)
Outdoor UV Exposure	(f1) Rated

Product Configurations

DISCONNECT SERIES

C

VERTICAL DISCONNECT HANDLE, WITHOUT PRE-MOUNTED CONTROL

Control Disconnect

C CONFIGURATION
Vertical disconnect handle, without pre-mounted control

C Construction

Material	SolarGuard® – Hot compression molded fiberglass reinforced polyester
Gasket	Poured polyurethane seamless gasket provides watertight, dust-tight environmental seal
Stainless Steel Hardware	300 Series stainless used on all hardware
Molded in Mounting Bosses	Panel mounting capability for fixed rear panel
Metal inserts	All bosses utilize threaded brass inserts accepting 3/8"-16 screws
Soft Edge Design	Rounded edges, minimal protrusions or exposed pocket areas for assembly of dust and debris
Latch Material	Glass Filled Polyamide with foam in place gasket
Color	Available in standard glacier gray (Pantone 428C)

C Modifications

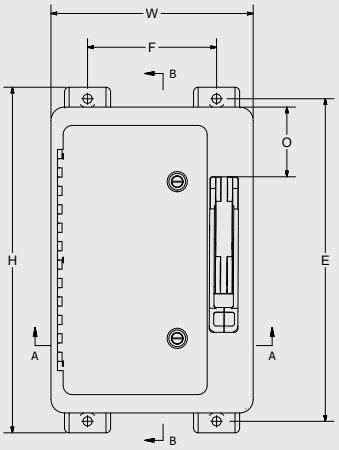
Custom Colors	pg. 21-22
Silk Screening	pg. 21-22
EMI/RFI Shielding	pg. 21-22
Custom Window	pg. 21-22
Custom Cutouts/Holes	pg. 21-22

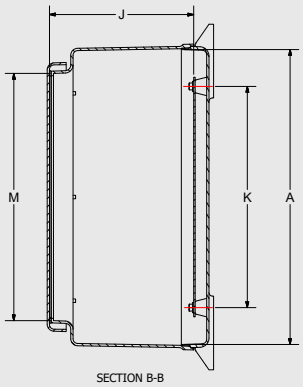
C Industry Standards

NEMA 250, UL Listed **UL50, UL50e, UL508A**	File E64358SP Type 1, 3, 3R, 4X, 12 as designated
CSA Std C22.2	File LR069014 Type 1, 3, 3R, 4X, 12
Temperature Range	(-76°F to +274°F) (-60°C to +134°C)
Flammability Rating	UL94-5V
Self Extinguishing	Non-halogenated, non-flame propagating
Chemical Resistance	Full chemical resistance charts listed in appendix
NFPA No. 101 Flame Spread	Class A (1)
Outdoor Exposure UL746C	(f1) Rated

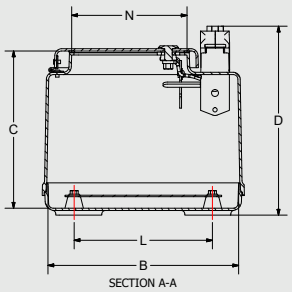
C Accessories

	Carbon Steel Back Panels	BP_CS	pg. 176
ACCESSORIES	**Drain & Breather Vents**		pg. 185
	Hole Plugs		pg. 187
	Assorted Hubs and Cord Grips		pg. 188-189
	All Other Accessories		pg. 184-194





SECTION B-B



SECTION A-A

NOTES:
1. CATALOG DRAWING IS FOR REFERENCE ONLY
2. SEE ACTUAL PART DRAWING FOR SPECIFIC DESIGN
3. "J" DIMENSION IS WITH 0.080" THICK BACK PANEL INSTALLED
4. BACK PANEL IS SOLD SEPARATELY

SCREW SIZES & TORQUE VALUES

PRODUCT SIZES	BACK PANEL SCREW SIZE	BACK PANEL RECOMMENDED TORQUE	COVER SCREW SIZE	RECOMMENDED MOUNTING FLANGE TORQUE
N1610 up to N4836	#3/8-16 x 1/2 Hex Bolt	28 - 32 in-lbs	N/A	80 in-lbs max
All made to order	#3/8-16 Stud	28 - 32 in-lbs	N/A	80 in-lbs max

Disconnect Series

CATALOG NUMBER	OVERALL H X W X D	INSIDE A X B X C	MOUNTING E X F	J	K	L	OPENING ENCLOSURE M X N	O	SHIP WEIGHT	PANEL NUMBER
C2016*	22.75 x 16.87 x 11.00 (578 x 429 x 279)	19.70 x 16.04 x 9.24 (500 x 407 x 235)	21.50 x 10.12 (546 x 257)	8.26 (210)	15.25 (387)	11.25 (286)	16.75 x 12.19 (425 x 310)	3.50 (89)	23.5	BP2016CD**
C2412*	26.95 x 13.72 x 13.25 (685 x 348 x 337)	24.00 x 12.87 x 11.33 (610 x 327 x 288)	25.75 x 6.25 (654 x 159)	10.33 (262)	19.25 (489)	7.25 (184)	21.00 x 8.37 (533 x 213)	5.75 (146)	28.6	BP2412CD**
C2424*	27.00 x 25.24 x 13.19 (686 x 641 x 335)	24.05 x 24.39 x 11.25 (611 x 619 x 286)	25.75 x 17.87 (654 x 454)	10.25 (260)	19.25 (489)	19.25 (489)	21.25 x 20.00 (540 x 508)	5.75 (146)	42.7	BP2424CD**
C3024*	33.41 x 26.32 x 13.19 (849 x 668 x 335)	30.46 x 25.47 x 11.27 (774 x 647 x 286)	32.25 x 18.50 (819 x 470)	10.27 (261)	25.25 (641)	19.25 (489)	27.38 x 21.25 (695 x 540)	12.25 (311)	53.6	BP3024CD**
C3630*	39.31 x 32.50 x 13.31 (999 x 826 x 338)	36.31 x 31.69 x 11.36 (922 x 805 x 289)	38.13 x 23.88 (968 x 606)	10.36 (263)	31.25 (794)	25.25 (641)	33.25 x 27.5 (845 x 692)	12.25 (311)	71.5	BP3630CD**

All measures are in inches, items in parentheses are in millimeters.
**Compatible with rod driven mechanisms – Disconnect, fuse block, breaker, yoke, switches, or other internal components are not furnished with enclosure.*

***Panel sold separately*

Panels

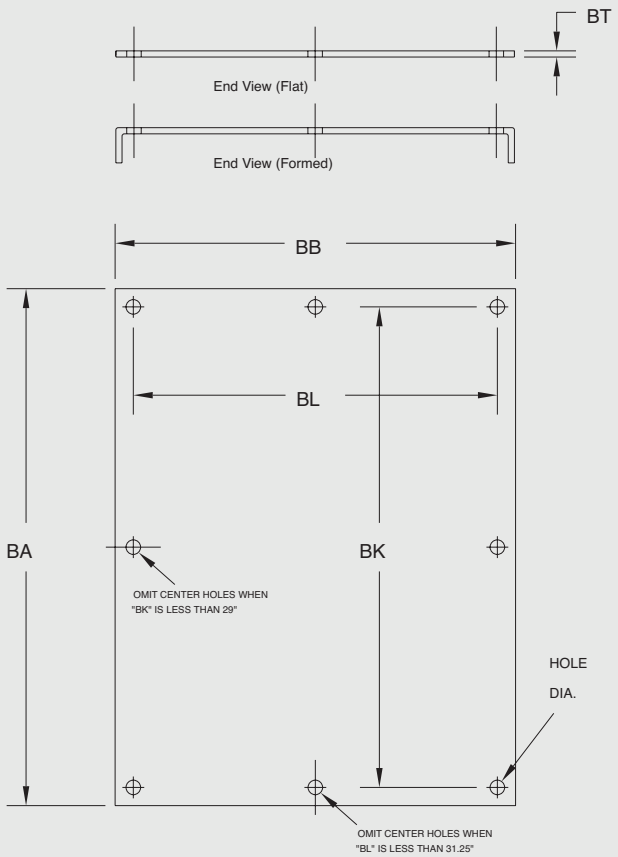
Back Panels

Dead Front Panels

Back Panels

Mount electrical and electronic devices inside

Stahlin traditional sized back panels allow for the mounting of electrical and electronic devices inside an enclosure. Stahlin back panels are available in a variety of materials, in standard industry footprints.



Back Panels – General Info

CATALOG SUFFIX	MATERIAL	GRADE	FINISH	MISC.
AL	Aluminum	3003 H14	None	
SS	Stainless Steel	304	None	
FG	Fiberglass			UL94-V0
CS	Carbon Steel	1008/1010	Painted White Enamel	

Note: Available for all product families unless otherwise specified.

Back Panels – J & JW, RJ & RJW, FatBoy, TeleControl, Diamond Shield®, Classic, PolyStar® and F Series

CATALOG NUMBER	BA	BB	BK	BL	BT (AL)	BT (FG)	BT (SS)	BT (CS)	PANEL TYPE	HOLE DIA.	# OF HOLES	WEIGHT (ALUMINUM) SUFFIX: AL	WEIGHT (FIBERGLASS) SUFFIX: FG	WEIGHT (STAINLESS) SUFFIX: SS	WEIGHT (CARBON STEEL) SUFFIX: CS
BP64	4.88 (124)	2.88 (73)	4.25 (108)	2.25 (57)	.080 (2)	.125 (3)	N/A	.075 (2)	Flat	.25 (6)	4	2 oz.	2 oz.	5 oz.	6 oz.
BP66	4.88 (124)	4.88 (124)	4.25 (108)	4.25 (108)	.080 (2)	.125 (3)	N/A	.075 (2)	Flat	.25 (6)	4	3 oz.	3 oz.	6 oz.	8 oz.
BP76	6 (152)	4.88 (124)	5.38 (137)	4.25 (108)	.080 (2)	.125 (3)	.060 (2)	.075 (2)	Flat	.25 (6)	4	4 oz.	4 oz	9 oz	10 oz.
BP86	6.88 (175)	4.88 (124)	6.25 (159)	4.25 (108)	.080 (2)	.125 (3)	N/A	.075 (2)	Flat	.25 (6)	4	4 oz.	4 oz.	12 oz.	12 oz.
BP88	6.88 (175)	6.88 (175)	6.25 (159)	6.25 (159)	.080 (2)	.125 (3)	N/A	.075 (2)	Flat	.25 (6)	4	5 oz.	5 oz.	15 oz.	15 oz.
BP96	8.25 (210)	4.88 (124)	7.63 (194)	4.25 (108)	.080 (2)	.125 (3)	.060 (2)	.075 (2)	Flat	.25 (6)	4	5 oz.	5 oz.	12 oz.	14 oz.
BP108	8.88 (225)	6.88 (175)	8.25 (210)	6.25 (159)	.080 (2)	.125 (3)	N/A	.075 (2)	Flat	.25 (6)	4	8 oz.	8 oz.	1.2 lb.	1.3 lb.
BP1210	10.88 (276)	8.88 (225)	10.25 (260	8.25 (210)	.080 (2)	.125 (3)	N/A	.075 (2)	Flat	.25 (6)	4	12 oz.	14 oz.	1.9 lb.	2.1 lb.
BP1212	10.88 (276)	10.88 (276)	10.25 (260	10.25 (260)	.080 (2)	.125 (3)	N/A	.075 (2)	Flat	.25 (6)	4	1 lb.	1.1 lb.	2.3 lb.	2.4 lb.
BP1407	12.88 (327)	5.88 (149)	12.25 (311)	5.25 (133)	.080 (2)	.125 (3)	N/A	.075 (2)	Flat	.25 (6)	4	14 oz.	14 oz.	2 lb.	2.1 lb.
BP1412	12.88 (327)	10.88 (276)	12.25 (311)	10.25 (260	.080 (2)	.125 (3)	N/A	.075 (2)	Flat	.25 (6)	4	1.125 lb.	1.3 lb.	2.8 lb.	3 lb.
BP1614	14.88 (378)	12.88 (327)	14.25 (362)	12.25 (311)	.080 (2)	.125 (3)	N/A	.075 (2)	Flat	.25 (6)	4	1.5 lb.	1.4 lb.	3.8 lb.	4.1 lb.
BP1816	16.88 (429)	14.88 (378)	16.25 (413)	14.250 (362)	.080 (2)	.125 (3)	N/A	.075 (2)	Flat	.25 (6)	4	1.94 lb.	2 lb.	5.5 lb.	5.4 lb.
BPJ2016	18.88 (479)	14.88 (378)	18.25 (463)	14.250 (362)	.080 (2)	.125 (3)	N/A	.075 (2)	Flat	.25 (6)	4	2.25 lb.	2.1 lb.	6.1 lb.	6.1 lb.
BPJ2020**	18 (457)	18 (457)	15.25 (387)	15.25 (387)	0.08 (2)	N/A	N/A	1.105 (3)	Flat	0.295 (7)	4	3.5 lbs.	N/A	N/A	5.7 lbs.
BPJ2420**	22 (559)	18 (457)	19.25 (489)	19.25 (489)	0.08 (2)	N/A	N/A	1.105 (3)	Flat	0.295 (7)	4	4.5 lbs.	N/A	N/A	10.8 lbs.
BPJ2424**	22 (559)	22 (559)	19.25 (489)	19.25 (489)	0.08 (2)	N/A	N/A	1.105 (3)	Flat	0.295 (7)	4	5.5 lbs.	N/A	N/A	13.4 lbs.
BP2424PC*	22.75 (577)	22.75 (577)	22.25 (565)	22.25 (565)	0.08 (2)	N/A	N/A	1.105 (3)	Flat	0.313 (8)	4	5.5 lbs.	N/A	N/A	N/A
BPJ3024**	27 (686)	21 (533)	25.25 (641)	19.25 (489)	0.128 (3.2)	N/A	N/A	0.128 (3.2)	Flat	0.5 (13)	5	7 lbs.	N/A	N/A	17 lbs.

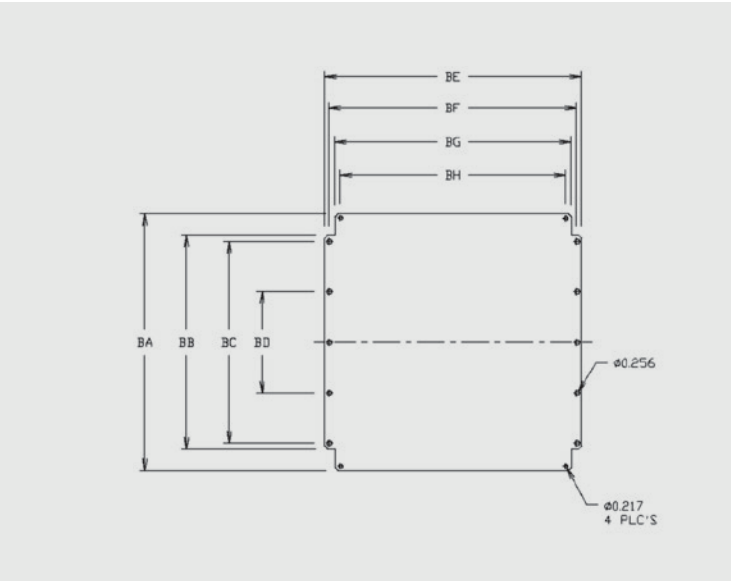
Caution: Metric units are for reference, do not convert. Note: When specifying combine Size ID Number and Material Suffix. Example: BP64AL for 6x4 Aluminum Back Panel.

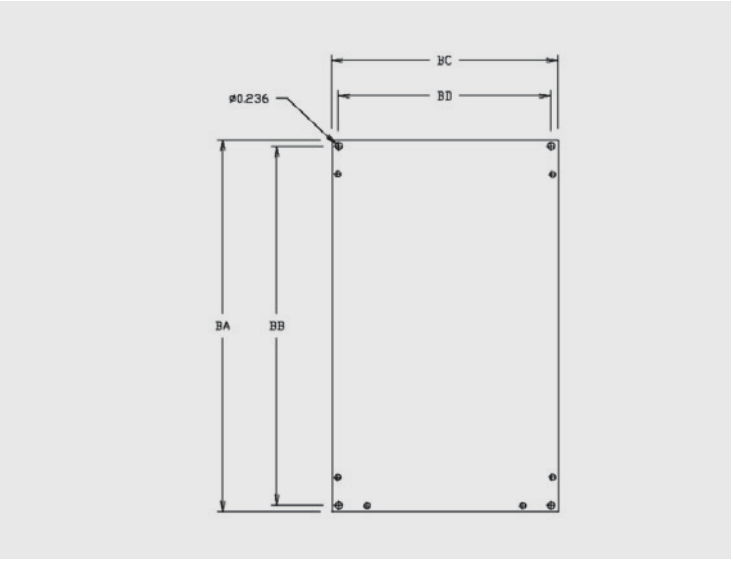
**For PolyStar PC2424 and PC2424CC.*
***For J series only.*

Back Panels – Disconnect Series

CATALOG NUMBER	BA	BB	BK	BL	PANEL THICKNESS BT	PANEL TYPE	HOLE DIA.	# OF HOLES	WEIGHT (STEEL) SUFFIX: CS	FITS TYPICAL ENCLOSURE SIZE
BP2016CD	16.88 (429)	13.38 (340)	15.25 (387)	11.25 (286)	0.135 (2)	Formed	0.50 (13)	4	7.3 lbs.	20 x 16 Disconnect Enclosure
BP2412CD	20.88 (530)	9.38 (238)	19.25 (489)	7.25 (184)	0.135 (2)	Formed	0.50 (13)	4	6.5 lbs.	24 x 12 Disconnect Enclosure
BP2424CD	20.88 (530)	21.38 (543)	19.25 (489)	19.25 (489)	0.135 (2)	Formed	0.50 (13)	4	14 lbs.	24 x 24 Disconnect Enclosure
BP3024CD	26.88 (683)	21.38 (543)	25.25 (641)	19.25 (489)	0.135 (2)	Formed	0.50 (13)	4	19 lbs.	30 x 24 Disconnect Enclosure
BP3630CD	32.88 (835)	27.38 (695)	31.25 (794)	25.25 (641)	0.135 (2)	Formed	0.50 (13)	6	29 lbs.	36 x 30 Disconnect Enclosure

Caution: Metric units are for reference, do not convert. Note: Carbon Steel (CS) available only.





Back Panels – DuraBoxx® D Series

CATALOG NUMBER	BA	BB	BC	BD	BE	BF	BG	BH	# OF HOLES
D333BP	2.48 (63)	1.02 (26)	N/A	N/A	2.68 (68)	2.28 (58)	1.85 (47)	N/A	2
D342BP	2.44 (62)	1.26 (32)	N/A	N/A	3.82 (97)	3.50 (89)	3.27 (83)	N/A	2
D554BP	4.21 (107)	2.44 (62)	2.05 (52)	N/A	4.29 (109)	3.74 (95)	3.39 (86)	2.83 (72)	6
D594BP	4.21 (107)	2.44 (62)	2.05 (52)	N/A	8.15 (207)	7.60 (193)	7.24 (184)	6.69 (170)	6
D774BP	5.67 (144)	3.43 (87)	2.99 (76)	N/A	5.67 (144)	5.20 (132)	4.61 (117)	4.02 (102)	6
D7114BP	5.67 (144)	3.43 (87)	2.99 (76)	N/A	9.61 (244)	9.13 (232)	8.54 (217)	7.95 (202)	6
D10105BP	9.17 (233)	6.93 (176)	3.94 (100)	N/A	9.37 (238)	8.94 (227)	8.31 (211)	7.72 (196)	6
D10165BP	9.17 (233)	6.93 (176)	3.94 (100)	N/A	15.08 (383)	14.65 (372)	14.02 (356)	13.43 (341)	6
D14144BP	13.54 (344)	11.30 (287)	10.63 (270)	5.35 (136)	13.54 (344)	13.07 (332)	12.48 (317)	11.89 (302)	10
D16165BP	15.28 (388)	13.03 (331)	9.84 (250)	N/A	15.04 (382)	14.65 (372)	13.98 (355)	13.43 (341)	6

Caution: Metric units are for reference, do not convert.

Back Panels – DuraBoxx® DL Series

CATALOG NUMBER	BA	BB	BC	BD	# OF HOLES
DL18127BP	13.94 (354)	13.46 (342)	8.46 (215)	7.95 (202)	4
DL18168BP	14.80 (376)	14.25 (362)	12.83 (326)	12.24 (311)	4
DL24168BP	21.89 (556)	21.34 (542)	14.84 (377)	14.21 (361)	4

Caution: Metric units are for reference, do not convert.

Back Panels – Starke Series

CATALOG NUMBER	BA	BB	BK	BL	BT(P)	PANEL TYPE	HOLE DIA.	# OF HOLES
BPS0808P	2.83 (72)	2.76 (70)	2.28 (58)	2.28 (58)	0.06 (1.5)	Flat	0.17 (4.3)	10
BPS1280P	4.33 (110)	2.76 (70)	3.23 (82)	2.28 (58)	0.06 (1.5)	Flat	0.18 (4.5)	10
BPS1680P	5.91 (150)	2.76 (70)	4.80 (122)	2.28 (58)	0.06 (1.5)	Flat	0.18 (4.5)	10
BPS1212P	4.41 (112)	4.33 (110)	3.31 (84)	3.86 (98)	0.08 (2)	Flat	0.18 (4.5)	4
BPS1612P	5.94 (151)	4.41 (112)	4.70 (120)	3.56 (91)	0.08 (2)	Flat	0.19 (4.8)	4
BPS2012P	7.44 (189)	4.29 (109)	6.30 (160)	3.54 (90)	0.08 (2)	Flat	0.18 (4.5)	4
BPS2015P	7.52 (191)	5.59 (142)	6.28 (160)	4.65 (118)	0.08 (2)	Flat	0.20 (5)	4
BPS2516P	9.53 (242)	5.98 (152)	8.33 (212)	5.04 (128)	0.10 (2.5)	Flat	0.19 (4.7)	4

Caution: Metric units are for reference, do not convert.

Back Panels – N Series – Wall Mount

CATALOG NUMBER	BA	BB	BK	BL	BT (AL)	BT (FG)	BT (SS)	BT (CS)	PANEL TYPE	HOLE DIA.	# OF HOLES	WEIGHT (ALUMINUM) SUFFIX: AL	WEIGHT (STAINLESS) SUFFIX: SS	WEIGHT (CARBON STEEL) SUFFIX: CS
BP1610	13.00 (330)	8.50 (216)	12.00 (305)	7.50 (191)	.080 (2)		N/A	.105 (3)	Flat	0.31 (8)	4	1 lb	1.5 lbs	3.3 lbs
BP2016	17.00 (432)	13.00 (330)	15.25 (387)	11.25 (286)	.080 (2)		N/A	.105 (3)	Flat	.50 (13)	4	2 lbs	3.7 lbs	6.7 lbs
BP2020	17.00 (432)	17.00 (432)	15.25 (387)	15.25 (387)	.080 (2)		N/A	.105 (3)	Flat	.50 (13)	4	2.5 lbs	4 lbs	5.7 lbs
BP2412	21.00 (533)	9.00 (229)	19.25 (489)	7.25 (184)	.080 (2)		N/A	.105 (3)	Flat	.50 (13)	4	1.5 lbs	5 lbs	8.7 lbs
BP2420	21.00 (533)	17.00 (432)	19.25 (489)	15.25 (387)	.128 (3)		N/A	.105 (3)	Flat	.50 (13)	4	4.5 lbs	6 lbs	10.8 lbs
BP2424	21.00 (533)	21.00 (533)	19.25 (489)	19.25 (489)	.128 (3)		N/A	.105 (3)	Flat	.50 (13)	4	5.5 lbs	7.4 lbs	13.4 lbs
BP3020	27.00 (686)	17.00 (432)	25.25 (641)	15.25 (387)	.128 (3)		N/A	.105 (3)	Flat	.50 (13)	4	5.8 lbs	7.7 lbs	14 lbs
BP3024	27.00 (686)	21.00 (533)	25.25 (641)	19.25 (489)	.128 (3)		N/A	.105 (3)	Flat	.50 (13)	4	7 lbs	9.6 lbs	17 lbs
BP3630	33.00 (838)	27.00 (686)	31.25 (794)	25.25 (641)	.128 (3)		N/A	.105 (3)	Flat	.50 (13)	6	11 lbs	15.2 lbs	27 lbs
BP3636	31.00 (787)	33.00 (838)	29.00 (737)	31.00 (787)	.128 (3)		N/A	.105 (3)	Formed	.50 (13)	8	14 lbs	18.5 lbs	33 lbs
BP4836	45.00 (1143)	33.00 (838)	43.25 (1099)	31.25 (794)	.128 (3)		.060 (2)	.105 (3)	Formed	.563 (13)	8	20 lbs	N/A	47 lbs
BP6024	57.00 (1448)	21.00 (533)	55.25 (1403)	19.25 (489)	0.128 (3)	0.25 (6)	0.060 (2)	0.105 (3)	Formed	0.563 (14)	6	2.5 lbs.	N/A	5.7 lbs.
BP6036	57.00 (1448)	33.00 (838)	55.25 (1403)	31.25 (794)	.128 (3)		.060 (3)	.105 (3)	Formed	.563 (13)	8	25 lbs	N/A	60 lbs
BP3648*	31.00 (787)	22.00 (559)	29.00 (737)	20.00 (508)	0.128 (3)	0.25 (6)	0.060 (2)	0.105 (3)	Formed	0.500 (13)	6	1 lb.	N/A	3.3 lbs.
BP5442*	49.00 (1245)	19.00 (483)	47.00 (1194)	17.00 (432)	0.128 (3)	0.25 (6)	0.060 (2)	0.105 (3)	Formed	0.563 (14)	6	2 lbs.	N/A	6.7 lbs.

Caution: Metric units are for reference, do not convert. Note: When specifying combine Size ID Number and Material Suffix. Example: BP1610CS for 16x10 Carbon Steel Back Panel.

*Set of two panels.

Back Panels – N Series – Free Standing, Single Door

CATALOG NUMBER	BA	BB	BK	BL	BT (AL)	BT (CS)	PANEL TYPE	HOLE DIA.	# OF HOLES	WEIGHT (ALUMINUM) SUFFIX: AL	WEIGHT (CARBON STEEL) SUFFIX: CS
BP7224	64.00 (1626)	20.00 (508)	62.00 (1575)	18.00 (457)	0.128 (3)	0.105 (3)	Formed	0.563 (14)	10	7 lbs.	17 lbs.
BP7225	64.00 (1626)	21.00 (533)	62.00 (1575)	19.00 (483)	.128 (3)	0.105 (3)	Formed	.563 (13)	10	18.5 lbs	43 lbs
BP7230	64.00 (1626)	26.00 (660)	62.00 (1575)	24.00 (610)	0.128 (3)	0.105 (3)	Formed	0.563 (14)	10	11 lbs.	27 lbs.
BP7236	64.00 (1626)	32.00 (813)	62.00 (1575)	30.00 (762)	0.128 (3)	0.105 (3)	Formed	0.563 (14)	10	20 lbs.	47 lbs.
BP9036	82.00 (2083)	32.00 (813)	80.00 (2032)	30.00 (762)	0.128 (3)	0.105 (3)	Formed	0.563 (14)	10	36 lbs.	79 lbs.

Caution: Metric units are for reference, do not convert. Note: When specifying combine Size ID Number and Material Suffix. Example: BP1610CS for 16x10 Carbon Steel Back Panel.

Back Panels – N Series – Free Standing, Double Door

CATALOG NUMBER	BA	BB	BK	BL	BT (AL)	BT (CS)	PANEL TYPE	HOLE DIA.	# OF HOLES	WEIGHT (ALUMINUM) SUFFIX: AL	WEIGHT (CARBON STEEL) SUFFIX: CS
BP6048**	52.50 (1334)	21.5 (546)	50.50 (1283)	19.50 (495)	0.128 (3)	0.105 (3)	Formed	0.563 (14)	10	1.5 lbs.	8.7 lbs.
BP6060**	52.50 (1334)	27.50 (699)	50.50 (1283)	25.50 (648)	0.128 (3)	0.105 (3)	Formed	0.563 (14)	10	4.5 lbs.	10.8 lbs.
BP7248**	64.00 (1626)	21.50 (546)	62.00 (1575)	19.50 (495)	0.128 (3)	0.105 (3)	Formed	0.563 (14)	10	18.5 lbs.	43 lbs.
BP7249**	64.00 (1626)	22.00 (559)	62.00 (1575)	20.00 (508)	0.128 (3)	0.105 (3)	Formed	.563 (13)	10	38 lbs	86 lbs
BP7260**	64.00 (1626)	27.50 (698)	62.00 (1575)	25.50 (648)	0.128 (3)	0.105 (3)	Formed	.563 (13)	10	46 lbs	109 lbs
BP7272**	64.00 (1626)	33.50 (851)	62.00 (1575)	31.50 (800)	0.128 (3)	0.105 (3)	Formed	0.563 (14)	10	38 lbs.	128 lbs.
BP7472**	66.00 (1676)	33.50 (851)	64.00 (1626)	31.50 (800)	0.128 (3)	0.105 (3)	Formed	0.563 (14)	10	60 lbs.	132 lbs.
BP9048**	82.00 (2083)	21.5 (546)	80.00 (2032)	19.50 (495)	0.128 (3)	0.105 (3)	Formed	0.563 (14)	10	48 lbs.	105 lbs.
BP9072**	82.00 (2083)	33.50 (851)	80.00 (2032)	31.50 (800)	0.128 (3)	0.105 (3)	Formed	0.563 (14)	10	72 lbs.	164 lbs.

Caution: Metric units are for reference, do not convert. Note: When specifying combine Size ID Number and Material Suffix. Example: BP1610CS for 16x10 Carbon Steel Back Panel.

*** Set of two panels.*

Dead Front Panels

Hide circuitry or devices with a cosmetically pleasing mounting surface

A dead front panel is designed to obscure the view and accessability of circuitry or devices while offering a cosmetically pleasing mounting surface. In a designer's view, the dead front panel can represent the cover of the enclosure that will now rest beneath the enclosure door.

Stahlin produces a top quality design, inclusive of spring-loaded releasable hinges that make component mounting and panel assembly a very simple task. When properly installed, the panel is securely fixed to the sidewall of the enclosure. This means that load-bearing weights are distributed throughout the assembly. The hinged suspended panel swings out of the way to provide full access to a panel or PC board mounting.

Dead Front Panels – J & JW, RJ & RJW Series

CATALOG NUMBER	H X W	PANEL THICKNESS	PANEL TYPE	WEIGHT (ALUMINUM) SUFFIX: AL	FITS TYPICAL ENCLOSURE SIZE
1008DF	9.75 x 7.75 (248 x 197)	0.080 (2)	Flat	8 oz.	10 x 8 (254 x 203)
1210DF	11.75 x 9.68 (298 x 246)	0.080 (2)	Flat	12 oz.	12 x 10 (305 x 254)
1412DF	13.75 x 11.75 (349 x 298)	0.080 (2)	Flat	1.1 lb.	14 x 12 (356 x 305)
1614DF	15.75 x 13.75 (400 x 349)	0.080 (2)	Flat	1.5 lb.	16 x 14 (406 x 356)
1816DF	17.75 x 15.75 (451 x 400)	0.080 (2)	Flat	2.5 lb.	18 x 16 (457 x 406)
J2016DF	19.81 x 15.75 (503 x 400)	0.080 (2)	Flat	2.4 lb.	20 x 16 (508 x 406)

Note: Available as Factory Install Modification ONLY, contact factory for details. Material available only in Aluminum (AL).

Food & Beverage

"Making the switch to Stahlin non-metallic enclosures for our temperature sensor controls has been a positive experience. The enclosures have met our needs. They offer us high quality product, perform as promised outside when exposed to UV-radiation, and are cost competitive. Together — we are now able to offer the food processing industry a great product."

– **Don,** *Business Development*
Full Service Food Plant Equipment
Systems Integrator

Read more at: **stahlin.com/industries**

Accessories

Stahlin Enclosure Accessories

Easily customize your configurations!

Stahlin® offers the largest selection of non-metallic enclosures in North America. However, the ability to customize into unique end-user configurations may be the single most compelling reason to buy Stahlin Enclosure products. **Stahlin Enclosure Accessories** are offered for the enhancement of your enclosure: from our patented PluggIt!® to our new thermal and lighting accessories.

Engineered modifications may become complex and are end-user specific; but these accessories can be added at any time: from the immediate enclosure purchase to an addition later as a separately priced item.

Part numbers and their specifications are shown in this literature; it will make your usage simpler whether you choose to order **Stahlin Enclosure Accessories** as add-ons, or on their own.

Environmental Management

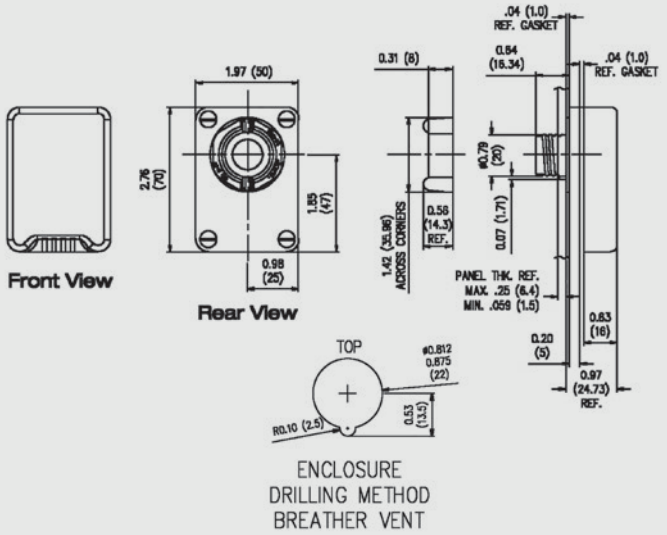
Prolong the life of installed components

Robroy Enclosures features a comprehensive offering of Enclosure Environmental Management Solutions. Environmental Management products are designed specifically to prolong the life of installed components. To accomplish this, Robroy offers many specific solutions such as a variety of breather and drain vents and plugs.

Breather Vent

Stahlin's non-metallic Breather Vent allows an enclosure to "breathe" — literally allowing the free passage of air while maintaining UL Type 4X enclosure integrity as a recognized component. **UL File #E64358 Type 4X**

CATALOG NUMBER
REBV4XKIT

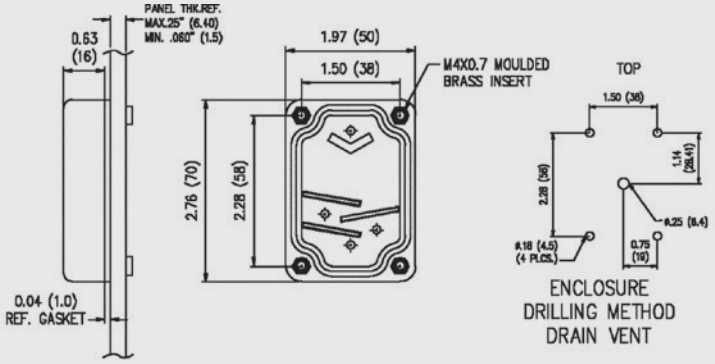


Drain Vent

Stahlin's non-metallic Drain Vent reliably protects electrical equipment housed inside an enclosure by properly draining unwanted moisture or accumulated water from within, while maintaining UL Type 4X enclosure integrity as a recognized component.

UL File #E64358 Type 4X

CATALOG NUMBER
REDV4XKIT

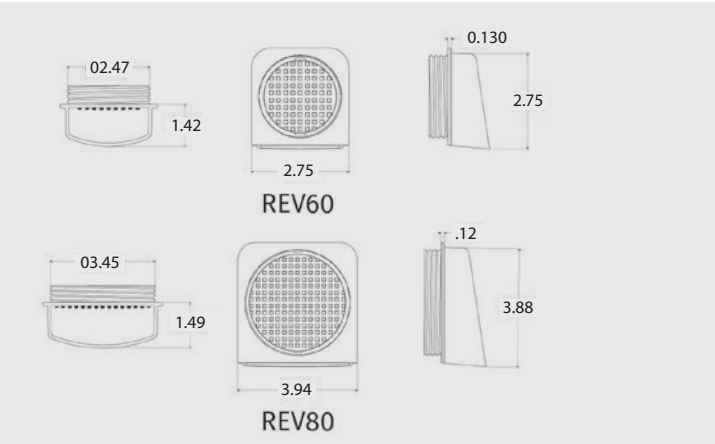


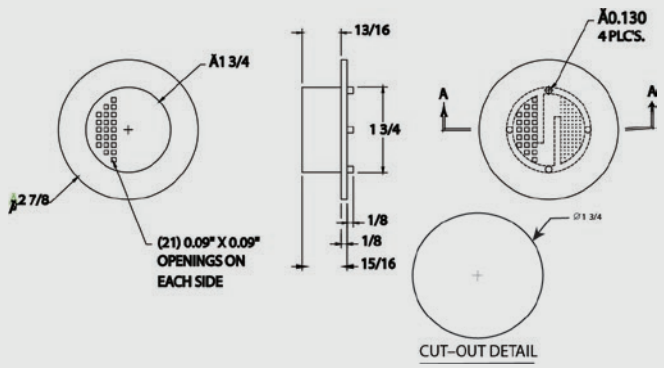
Vent

Stahlin's polycarbonate vent offers ventilation installation with the turn of the wrist.

UL File #E64358 Type 3R *(REV60 only)*

CATALOG NUMBER	DESCRIPTION	CUT-OUT DIAMETER
REV60	Small Vent (60mm)	2.5" (63.55mm) MAX
REV80	Large Vent (80mm)	3.43" (87.12mm)



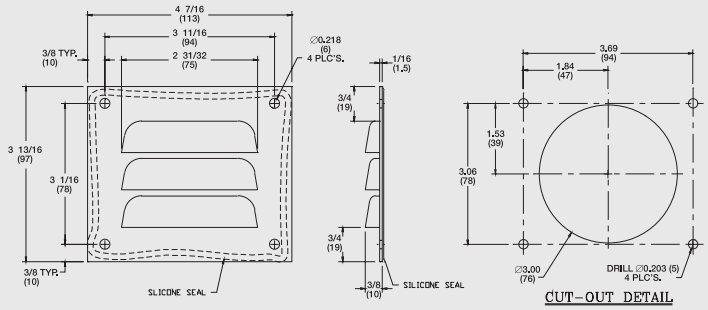


Drain & Vent

Stahlin's PVC Drain & Vent is a versatile vent, with easy installation. Available as an individual part, or kit.

CATALOG NUMBER
REDV1PVC
REDVK3KIT

Note: Kit includes REDV1PVC and silicone pack.



Louver Plate Vent

Stahlin's polypropylene Louver Plate Vent offers ventilation with a thin profile. Offered as a lone plate, or a full installation kit.

CATALOG NUMBER
RELP1
RELPK3KIT

Vapor Capsule

Stahlin Vapor Capsules contain a unique vapor phase inhibitor designed to protect metallic surfaces within an enclosure against airborne corrosion.

CATALOG NUMBER
REVC21

Note: Radius of Protection: 2 ft. Normal Life Span: 1 yr.

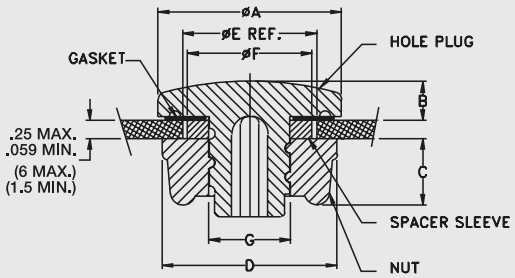
Condensation Plug

Stahlin's condensation plug is a 4X rated small footprint way of venting your enclosure.

CATALOG NUMBER
REAVP1/2

PluggIt!®

- Superior corrosion resistance compared to rust-prone carbon steel and other metallic alternatives helps ensure increased enclosure life expectancy.
- Cost effective when compared to either carbon or stainless steel alternatives.
- Considerably better long-term resistance to UV degradation versus UV-susceptible soft rubber plugs that turn brittle from extreme temperature variations and repeated UV exposure.
- Will not create galvanic corrosion associated with dissimilar metals sometimes used in electrical enclosures.
- Maintains all chemical resistance features of current Robroy Enclosures products.
- Flame retardant material to UL 94V-0.
- A submersion/hosedown rated component for use in electrical enclosures UL recognized to type 4X and 6P.
- IEC tested to IP66 and IP68.
- Temperature Rating: -26°F to +257°F (-32°C to +125°C)
- Patented design since 2017
- UL File #E64358; Type 1, 3R, 4, 4X, 6, 6P, 12



CATALOG NUMBER	ØA	B +0.05" -0.00"	C	D ACROSS FLATS	ØG	CONFIG.	ØE REF. - NOM. HOLE DIA. RANGE	ØF	COMMON INDUSTRY APPLICATIONS
REHPSERIES1	1.00" (25.40)	0.22" (5.59)	0.35" (8.89)	0.88" (22.35)	0.44" (11.18)	CONFIG 1	0.50" - 0.56" (12.70 - 14.29)	N/A	1/2" Dia. Hole
						CONFIG 2	0.63" - 0.69" (16.00 - 17.46)	0.56" (14.22)	5/8" Dia. Hole
						CONFIG 3	0.75" - 0.81" (19.05 - 20.64)	0.68" (17.27)	3/4" Dia. Hole
REHPSERIES1.5	1.20" (30.48)	0.22" (5.59)	0.33" (8.38)	1.04" (26.39)	0.81" (20.57)	CONFIG 3.5	0.88" (22.35)	N/A	1/2" Conduit
REHPSERIES2	1.50" (38.10)	0.22" (5.59)	0.38" (9.63)	1.38" (35.05)	0.85" (21.59)	CONFIG 4	0.88" - 1.00" (22.35 - 25.40)	N/A	1/2" Conduit 22mm PB
						CONFIG 5	1.06" - 1.12" (26.92 - 28.45)	1.03" (26.16)	3/4" Conduit
						CONFIG 6	1.22" - 1.28" (30.73 - 32.51)	1.19" (30.22)	30mm PB
REHPSERIES3	2.00" (50.80)	0.22" (5.59)	0.38" (9.63)	1.88" (47.75)	1.35" (34.29)	CONFIG 7	1.38" - 1.50" (35.05 - 38.10)	N/A	1" Conduit
						CONFIG 8	1.69" - 1.75" (42.67 - 44.45)	1.65" (41.91)	1-1/4" Conduit
REHPSERIES4	2.75" (69.85)	0.22" (5.59)	0.41" (10.41)	2.63" (66.67)	1.97" (50.04)	CONFIG 9	2.00" - 2.12" (50.80 - 53.85)	N/A	1-1/2" Conduit
						CONFIG 10	2.50" - 2.56" (63.50 - 65.09)	2.44" (61.89)	2" Conduit
REHPSERIES5	3.38" (85.85)	0.22" (5.59)	0.34" (8.63)	3.38" (85.85)	2.97" (75.44)	CONFIG 11	3.00" (76.20)	N/A	2-1/2" Conduit
REHPSERIES6	4.00" (101.60)	0.22" (5.59)	0.34" (8.63)	4.00" (101.60)	3.59" (91.19)	CONFIG 12	3.62" (91.95)	N/A	3" Conduit
REHPSERIES7	4.50" (114.30)	0.22" (5.59)	0.38" (9.63)	4.50" (114.30)	4.09" (103.88)	CONFIG 13	4.12" (104.65)	N/A	3-1/2" Conduit
REHPSERIES8	5.00" (127.00)	0.22" (5.59)	0.41" (10.41)	5.00" (127.00)	4.59" (116.58)	CONFIG 14	4.62" (117.35)	N/A	4" Conduit

Fittings

Wide variety of styles

Robroy offers a broad line of electrical fittings that allow raceways to safely enter and exit the enclosure. Hubs and cord connectors are offered in a variety of sizes and styles to meet specific applications while maintaining enclosure ratings. Materials range from die cast aluminum, nylon and PVC coated aluminum.

PVC Coated Hubs

For connections using rigid PVC coated conduit, Plasti-bond red hubs are available in four standard sizes.

CATALOG NUMBER	SIZE
RESTPRSTG2	3/4”
RESTPRSTG3	1”
RESTPRSTG4	1 1/4”
RESTPRSTG5	1 1/2”

Nylon Cord Grips

Nylon cord grips are durable and easy to install. The body and sealing nut are manufactured with a tough, impact resistant nylon. Together the nut and washer form a positive sealing grip when installed through an enclosure wall. The oil resistant neoprene grommet and nylon washer fit tightly around an entrance cord, sealing out moisture, dust and foreign materials.

Industry Standards

NEMA Std	FBI-1983
UL Std	514 File No. E53599 Type 4
CSA Std C22.2	No. 18 File No. 28985 Type 4
HAZ LOC	NEC 501-4(b), 502-4(a)(2), 503-3(a)
Classes	Class I, Div 2, Class II Div 1 and 2; Class III Div 1 and 2

CATALOG NUMBER	HUB DIAMETER	CABLE DIA. RANGE	INSIDE BODY DIA.
RE5122	1/2"	.250-.312	.625
RE5123	1/2"	.312-.375	.625
RE5124	1/2"	.375-.4378	.625
RE5125	1/2"	.438-.500	.625
RE5126*	1/2"	.500-.562	.625
RE5146	3/4"	.562-.625	.788

**Cable jacket may have to be stripped for clearance*

Cable Glands

Stahlin's Nylon Cable Glands are used to seal around cables to keep out liquids, and debris.

CATALOG NUMBER	DESCRIPTION
RENPT 3/8	3/8" Nylon NPT cable gland
RENPT 1/2	1/2" Nylon NPT cable gland
RENPT 3/4	3/4" Nylon NPT cable gland
RENPT 1	1" Nylon NPT cable gland

Latches

Robroy offers stainless steel latches to replace, repair or exchange existing latches in the field.

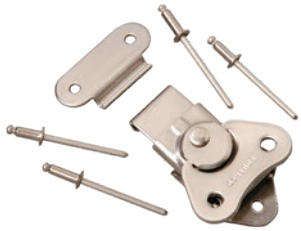
Stainless Steel

J SERIES – JLL150KIT

NLL150WTKIT

SSLKIT

CONTROL / N SERIES NLL150KIT



CATALOG NUMBER	CONFIG.	FAMILY	DESCRIPTION
JLL150KIT	HLL	J, RJ, CL	Standard link lock latch used for “HLL” designations Type 4X
NLL150KIT	HLL	N	Standard link lock latch used on “N” Series Type 12, 3R and 4X
NLL150WTKIT	HLL	N	Standard link lock latch used on “N” Series Type 4X top & bottom
SSLKIT	HPL	J, RJ, CL	Standard padlock latch used for “HPL” designations Type 4X

Wing Type

Polymer wing-type ¼ turn, finger latch for J series enclosures.

CATALOG NUMBER	CONFIGURATION	FAMILY	DESCRIPTION
WKJLatch	Wing Through Door	J, RJ	Operator mechanism for “J” series.

Hasp

Stainless Steel padlock hasp to secure N Series enclosure door. Accommodates standard diameter padlock loops.

CATALOG NUMBER	CONFIGURATION	FAMILY	DESCRIPTION
HASPKITSS	N/A	N	Stainless steel alternate hasp pin for “N” Series enclosures
HASPKITFG	N/A	N	Fiberglass alternate hasp pin for “N” Series enclosures

Hardware

Readily available

Robroy offers a variety of replacement hardware for covers and back panel installations where it has been lost or misplaced. Hardware is readily available to ship and is an exact match to original hardware provided with the enclosure.

Encapsulated Screws

CATALOG NUMBER
RE2PKENCAP
RE4PKENCAP

Stainless Steel Screws

CATALOG NUMBER	SERIES	TYPE
2PKSS*	J	Cover
4PKSS*	J	Cover
4PKSSCF*	CF	Cover
2PKSSCL*	CL	Cover
4PKBPSS**	DS, J, CL	Back Panel
4PKBPN1610**	N	Back Panel
4PKBPN**	N	Back Panel
6PKBPN**	N	Back Panel
8PKBPN**	N	Back Panel

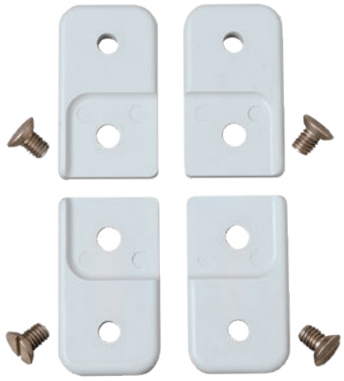
** Includes cover screws and "O" rings.*
*** Includes back panel screws and washers.*

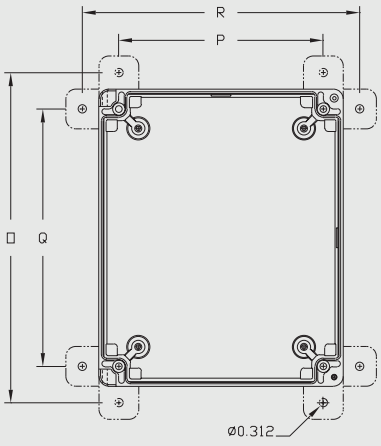
Mounting Feet

Install an enclosure without compromising the integrity

External mounting feet allow the installer to position and mount a Stahlin Enclosures in variety of applications. Mounting feet allow the enclosure to be installed without compromising the integrity of the enclosure. Most mounting feet can be installed vertically or horizontally.

MOUNTING FEET
CLMTGFTKIT





Classic Series Mounting Feet

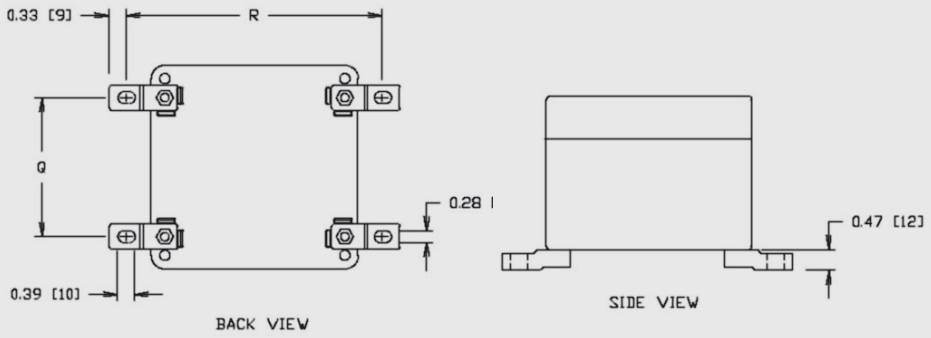
CATALOG NUMBER	SIZE	O	P	Q	R
CLMTGFTKIT	707	8.47 (215)	5.71 (145)	5.71 (145)	8.46 (215)
CLMTGFTKIT	907	10.47 (266)	5.71 (145)	7.71 (196)	8.46 (215)
CLMTGFTKIT	1109	12.48 (317)	7.71 (196)	9.71 (247)	10.46 (266)
CLMTGFTKIT	1311	14.46 (368)	9.71 (247)	11.71 (297)	12.46 (316)
CLMTGFTKIT	1513	16.47 (418)	11.71 (297)	13.71 (348)	14.46 (367)

Diamond Shield® Mounting Feet

CATALOG NUMBER	MTG. FOOT KIT #	CATALOG NUMBER	MTG. FOOT KIT #
60604	DSMGFTKIT	141206	DSMGFTKIT
80604	DSMGFTKIT	141208	DSMGFTKIT
80804	DSMGFTKIT	161408	DSMGFTKIT
100806	DSMGFTKIT	181610	DSMGFTKIT
121006	DSMGFTKIT	201610	DSMGFTKIT

DuraBoxx® D Series Mounting Feet

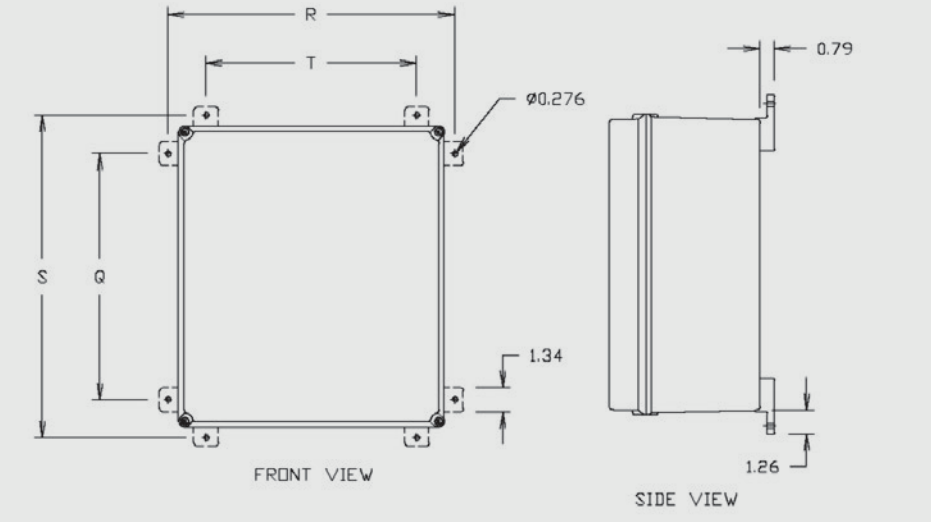
USE WITH MODEL #	MOUNTING Q X R	MTG. FOOT KIT #
D554W	3.23 x 5.98 (82 x 152)	DMTGKIT
D594W	3.23 x 9.84 (82 x 250)	DMTGKIT
D774W	4.33 x 7.32 (110 x 186)	DMTGKIT
D7114W	4.33 x 11.26 (110 x 286)	DMTGKIT
D10105W	7.87 x 11.06 (200 x 281)	DMTGKIT
D10165W	7.87 x 16.77 (200 x 426)	DMTGKIT
D14144W	12.20 x 15.20 (310 x 386)	DMTGKIT
D16165W	13.98 x 16.77 (355 x 426)	DMTGKIT



DuraBoxx® DL Series Mounting Feet

USE WITH MODEL #	MOUNTING Q X R	MOUNTING S X T	MTG. FOOT KIT #
DL18127W	12.66 x 11.34 (321 x 288)	N/A	DLMTGKIT
DL18168W	13.53 x 15.73 (344 x 400)	17.70 x 11.56 (450 x 294)	DLMTGKIT
DL24168W	20.63 x 17.70 (524 x 450)	24.80 x 13.53 (630 x 344)	DLMTGKIT

Caution: Metric units are for reference, do not convert.



Miscellaneous

Plastic Print Pocket

Stahlin's Print Pocket is self adhesive and can be utilized to store prints or other important documents within the enclosure.

CATALOG NUMBER	HEIGHT	WIDTH	DEPTH
REPRTPKT	9.3"	10.4"	1.2"

Pole Mount

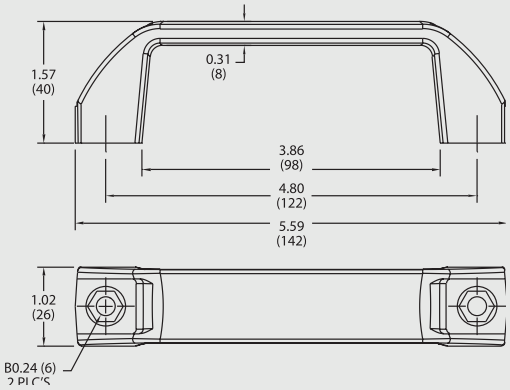
Stahlin's pole mount kit fits the enclosure dimension that will be mounted perpendicular to pole. Comes with light gray powder coated carbon steel top and bottom flanges, stainless steel straps, and mounting screws.

CATALOG NUMBER
PM6-8
PM10-12
PM14-16
PM18-24

Carrying Handle

Stahlin's nylon carrying handle is the perfect solution to make your system portable.

CATALOG NUMBER
RECH109506



Technical Information

Enclosure Materials

Chemical Resistance Specifications

The choice of material is dependent on the concentration of various corrosives present in the application environment and other physical properties necessary to meet the design specifications.

To begin the selection process, one must consider the general atmosphere as well as the corrosive agents which can be present in an application. Defining the corroding agents and determining the concentration can be a complex process. Usually several corrosive elements are present and interactions are not always well documented.

Water (and water states such as ice, snow, mist, fog, vapor) is the most common corrosive and is usually present to some extent in every enclosure application. Each environment is unique and all possible corrosive agents should be identified for the intended enclosure application.

To select the best enclosure material for an application; chemical resistance, physical strength and economic data are presented in several tables beginning on the next page. In Table 1 enclosure materials are rated on a continuum from “Recommended” to “Limited or Unacceptable” in three broad categories of chemicals. Since the chemical resistance categories in the table are extremely broad, some materials may perform well in specific corrosive environments within a general category and it is best to consult the detailed Chemical Resistance Information provided in Table 3.

Besides the enclosure material, the corrosion resistance of windows, gaskets, latches, etc. must also be considered. Table 4 provides corrosion resistance information that can be used to select the commonly used materials for these features.

Much of the chemical resistance information in Table 3 is based on total immersion testing in the chemical for a minimum of 30 days at 72° F. Some fiberglass test specimens were evaluated using procedures outlined in ASTM D 543, Test Method for Resistance of Plastics to Chemical Reagents.

The information in these tables is intended as a guide only. Total immersion testing is considered quite severe and **the results may not necessarily reflect the performance under actual field conditions.** The user assumes responsibility for selection of the material based on the characteristics of the application environment.

Stahlin Enclosure Back Panel Construction Materials

Fiberglass (FG)

Fiber reinforced polymer made of a plastic matrix reinforced by fine fibers made of glass. The plastic matrix is a thermosetting plastic made of polyester.

Carbon Steel (CS)

A low carbon, rolled steel produced by passing bar stock through a set of rolls. Stahlin CS back panels are powder coated for appearance and protection.

Stainless Steel (SS)

Stainless steel is defined as a steel alloy with a minimum of 11% chromium content by mass. Stainless steel is used where both the properties of steel and resistance to corrosion are required. Stahlin hardware and SS back panels are fabricated utilizing 3000 series stainless steel.

Aluminum (AL)

A lightweight metal that quickly forms a natural oxide layer to resist corrosion. Stahlin fabricates back panels from Type 3003 H14 Aluminum, the highest strength non-heat treatable aluminum alloy recommended for marine applications.

TABLE 1. Broad Categories of Enclosure Material Chemical Resistance

CONTINUUM OF USE	GENERAL CATEGORY OF CHEMICALS		
	ACIDS	ALKALINES	SOLVENTS
↓			Fiberglass
↓	Stainless Steel	Fiberglass	Stainless Steel
Recommended		Stainless Steel	Aluminum
↓	Fiberglass		Powder Coated Steel
↓			
Acceptable	PC	PC	Galvanized Steel
↓	PVC	Galvanized Steel	
↓	Powder Coated Steel	Powder Coated Steel	
Limited or Unacceptable			
↓	Aluminum	PVC	PC
↓	Galvanized Steel	Aluminum	PVC

Appendix

TABLE 2. Relative Material Strength and Cost Comparison of Commonly Used Enclosure Materials

MATERIAL	RELATIVE PHYSICAL STRENGTH	RELATIVE COST	APPLICATION CONDITIONS	TEMPERATURE LIMITATIONS
Aluminum	Average	Average	Indoor and Outdoor, Marine, Solvents, Petrochemical Sulfates, Nitrates and Specific Acids.	None for enclosure applications
Fiberglass	Average	Low-Average	Indoor and Outdoor for continuously damp and highly corrosive environments. PetroChem, Water Treatment, Food Processing, Coating, Salts and Chemicals, Solar.	-40°F(C) to 250°F(121°C) -76°F to 274°F (-60°C to 134°C)
Mild Steel: Galvanized Painted	High	Average Low	Indoor and Outdoor where the respective coating provides acceptable protection in a mildly corrosive environment.	None for enclosure applications
Stainless Steel	High	Average-High	Indoor and Outdoor in highly corrosive applications. Food and Dairy Processing or Marine.	None for enclosure applications
Acrylic	Average	Low	Enclosure Windows. Weatherable, Scratch Resistant. Good resistance to Solvents	-31°F (-35°C) to 180°F (82°C)
Polycarbonate	Average	Low-Average	Enclosure Windows. Not recommended for direct sunlight, exposure to organic solvents and concentrated alkalis.	-31°F (-35°C) to 248°F (120°C)
Nylon	Average	Low	Cord Grip, Hinges, Latches	-22°F (-30°C) to 212°F (100°C)
Gaskets: Neoprene Silicone Urethane	Low Low Low	Low Average Average	Oil Resistance. Seams may be a problem Oil Resistance Temperature & Chemical Resistance. Water and Oil Resistance, Chemical Resistance.	-40°F (C) to 225°F (107°C) -40°F (-40°C) to 350°F (175°C) -40°F (C) to 200°F (93°C)

Detailed material strength information is beyond the scope of this catalog and should be obtained from a materials reference; however, Table 2 provides some relative data to help with this selection.

TABLE 3 & 4. KEY:

S = Superior Resistance/Completely Unaffected under all Conditions
L = Limited Resistance, Some Chemical Attack May Occur Over Time
M = Moderate Resistance, Superficial Effects only, Testing Recommended
U = Unsatisfactory, Severe/Chemical Attack in a relatively short time
– = No Data Available

TABLE 3. Chemical Resistance of Fiberglass Materials and Enclosure Accessories

			STEEL			STAINLESS STEEL			
CHEMICAL	ALUMINUM	FIBER GLASS POLYESTER	POLYESTER POWDER	URETHANE ENAMEL	GALVANIZED	TYPE 304	TYPE 316	PC	PVC
Acetyldehyde	S	U	—	—	—	S	S	U	U
Acetic Acid (10%)	L	S	U	U	U	S	U	S	U
Acetone	S	L	L	U	L	S	S	U	U
Aluminum Chloride (10%)	U	S	U	U	U	U	M	S	S
Aluminum Sulfate (10%)	L	S	U	U	U	U	S	S	S
Ammonia Gas	L	S	—	—	—	S	S	—	—
Ammonium Chloride	U	S	U	U	U	S	S	S	S
Ammonium Hydroxide (10%)	S	L	U	U	U	S	S	U	S

TABLE 3. Chemical Resistance of Fiberglass Materials and Enclosure Accessories

CHEMICAL	ALUMINUM	FIBER GLASS POLYESTER	STEEL			STAINLESS STEEL		PC	PVC
			POLYESTER POWDER	URETHANE ENAMEL	GALVANIZED	TYPE 304	TYPE 316		
Ammonium Nitrate (10%)	M	S	U	U	U	S	S	U	S
Ammonium Phosphate (10%)	L	M	S	L	U	S	M	S	—
Ammonium Sulfate	S	S	—	—	—	S	S	S	S
Aniline	L	U	—	—	—	S	S	U	L
ASTM #1 Oil	S	S	S	S	S	S	S	L	—
ASTM #3 Oil	S	S	S	S	S	S	S	L	—
Axle Grease	S	S	S	S	S	S	S	L	—
Benzene	S	S	—	—	S	S	S	U	L
Boric Acid (10%)	M	S	U	U	U	S	S	S	L
Bromine	U	L	U	U	U	U	U	U	U
Butyl Acetate	M	L	—	—	—	S	S	U	U
Butyric Acid	U	S	—	—	—	S	S	U	U
Calcium Chloride (10%)	L	S	U	U	U	L	S	S	L
Calcium Hydroxide (10%)	U	S	U	U	U	S	S	S	L
Calcium Hypochlorite (10%)	L	M	U	U	U	U	M	L	L
Calcium Sulfate	M	S	U	U	U	S	S	S	L
Carbolic Acid (25%)	M	L	U	U	U	S	S	U	
Carbon Disulfide	S	L	—	—	—	S	S	U	U
Carbon Tetrachloride	S	M	U	S	S	U	S	U	
Chlorine (dry)	S	S	—	—	—	S	S	U	U
Chlorine (water) 5-10 ppm	M	L	S	U	U	U	—	S	S
Chlorobenzene	S	S	—	—	S	S	S	U	
Chloroform	L	U	—	—	—	S	S	U	U
Chrome Plating Solution	U	L	U	U	U	L	L	S	—
Chromic Acid	S	S	—	—	—	U	U	U	U
Citric Acid (10%)	U	M	U	U	U	S	S	S	L
Copper Sulfate	U	S	—	—	—	S	S	S	S
Creosote	L	L	—	—	—	S	S	U	—
Cutting Fluid (5 Star) 10%	S	S	U	U	U	S	S	L	—
Cutting Fluid (Castrol 980 H)	S	S	S	U	U	S	S	L	—
Cutting Fluid (Norton 205)	U	S	U	U	U	S	S	S	—
Cutting Fluid (Rustlick) 10%	M	S	U	U	U	S	S	S	—
Cutting Oil (Dark)	S	S	S	S	S	S	S	S	—
Diethyl Ether	S	S	—	—	—	S	S	U	U
Ethyl Alcohol	S	S	M	U	S	S	S	M	S
Ethylene Dichloride	S	L	—	—	—	—	—	U	U
Ethylene Glycol	S	S	S	S	U	S	S	S	S

TABLE 3. Chemical Resistance of Fiberglass Materials and Enclosure Accessories

CHEMICAL	ALUMINUM	FIBER GLASS POLYESTER	STEEL			STAINLESS STEEL		PC	PVC
			POLYESTER POWDER	URETHANE ENAMEL	GALVANIZED	TYPE 304	TYPE 316		
Ferric Chloride	U	S	U	U	U	S	U	S	S
Ferric Nitrate	—	S	—	—	—	S	S	S	S
Ferric Sulfate	M	S	—	—	—	S	S	S	S
Fluorine	S	U	—	—	—	M	—	L	U
Formaldehyde	S	S	—	—	—	L	S	S	L
Formic Acid	U	S	U	U	U	M	S	S	—
Fuel Oil (#2)	S	S	M	S	S	S	M	L	S
Gasoline	S	M	—	—	—	S	S	U	S
Glycerine	S	S	—	—	S	S	S	S	S
Hydraulic Brake Fluid	S	S	U	U	S	S	S	U	—
Hydraulic Oil	S	S	S	S	S	S	S	L	S
Hydrochloric Acid (10%)	U	M	U	U	U	U	U	S	S
Hydrocyanic Acid	S	U	—	—	—	S	S	L	L
Hydrofluoric Acid (20%)	U	U	U	U	U	U	U	L	L
Hydrogen Peroxide	S	M	—	—	—	L	S	S	S
Hydrogen Sulfide	M	S	—	—	—	L	S	L	L
Hypochlorus Acid	U	S	—	—	—	—	—	—	—
Isopropyl Alcohol	S	S	M	U	S	S	S	S	—
Kerosene	S	S	S	S	S	S	S	L	S
Lacquer Thinner	S	S	L	U	S	S	S	U	U
Lactic Acid	M	S	—	—	—	L	S	L	L
Lime	M	M	—	—	—	—	—	—	L
Liquid Dish Soap (10%)	M	S	U	U	U	S	M	S	S
Lubricating Oils	S	S	—	—	—	S	S	S	—
Magnesium Chloride (10%)	L	S	U	U	U	S	S	S	L
Magnesium Hydroxide (10%)	L	S	U	U	U	S	S	S	S
Mercuric Chloride (10%)	U	M	U	U	U	S	U	S	L
Methyl Ethyl Ketone	S	L	—	—	—	S	S	U	U
Methylene Chloride	S	S	U	U	M	S	S	U	U
Milk	S	S	—	—	—	S	S	S	S
Mineral Oil	S	S	—	—	—	S	S	S	S
Mineral Spirits	S	S	S	S	S	S	S	L	S
Motor Oil (10 weight)	S	S	S	S	S	S	S	S	L
Nickel Salts	L	S	—	—	—	L	S	S	S
Nitric Acid (10%)	U	M	U	U	U	S	S	L	S
Nitrobenzene	S	L	—	—	—	S	S	U	U
Oleic Acid	S	S	—	—	—	L	S	S	L

TABLE 3. Chemical Resistance of Fiberglass Materials and Enclosure Accessories

CHEMICAL	ALUMINUM	FIBER GLASS POLYESTER	STEEL			STAINLESS STEEL		PC	PVC
			POLYESTER POWDER	URETHANE ENAMEL	GALVANIZED	TYPE 304	TYPE 316		
Perchlorethylene	S	S	S	U	S	S	S	U	L
Phosphoric Acid (25%)	U	L	U	U	U	S	S	S	S
Phosphoric Acid (50%)	U	U	U	U	U	S	S	S	S
Pickling Solution	U	M	U	U	U	S	M	S	—
Potassium Carbonate (10%)	U	S	S	S	L	S	S	S	L
Potassium Chloride (25%)	L	S	U	U	U	S	S	S	S
Potassium Hydroxide (25%)	U	U	U	U	U	M	M	U	S
Potassium Nitrate (10%)	U	S	U	U	U	S	S	S	S
Potassium Sulfate (10%)	L	S	U	U	U	S	S	S	L
Soap (Igepal) 10%	L	S	S	U	U	S	S	S	S
Sodium Bicarbonate (10%)	L	S	S	S	U	S	S	S	S
Sodium Bisulfate (10%)	U	L	U	U	U	S	S	S	S
Sodium Chloride (25%)	L	S	U	U	U	S	S	S	S
Sodium Hydroxide	U	U	U	U	U	M	M	U	S
Sodium Hypochlorite	U	M	U	U	U	S	M	L	S
Sodium Nitrate (10%)	M	S	U	U	U	S	S	S	S
Sodium Phosphate (10%)	L	S	U	U	U	S	S	S	S
Sulfuric Acid (25%)	U	S	U	U	U	S	S	S	S
Sulfurus Acid (10%)	U	U	U	U	U	S	S	S	S
Tannic Acid ((10%)	L	S	U	U	U	M	M	S	S
Tetrahydrofuran	M	L	U	U	U	S	S	U	U
Toluene	S	S	L	U	S	S	S	U	U
Trichloroethylene	S	U	—	—	—	L	S	U	U
Trisodium Phosphate	L	M	—	—	—	—	—	S	S
Turpentine	S	M	M	U	L	S	S	S	U
Vegetable Oils	S	S	—	—	—	S	S	S	S
Vinegar	M	S	—	—	—	S	S	S	L
Water, Industrial	L	S	L	L	L	S	S	S	S
Water, Rain	L	S	S	L	L	S	S	S	—
Water, Sea	L	S	U	U	U	S	S	S	S
Water, Tap	L	S	S	L	L	S	S	S	S
Xylene	S	S	L	U	S	S	S	U	U
Zinc Acetate	S	S	—	—	—	S	S	—	—
Zinc Chloride	L	S	S	U	U	M	S	M	L
Zinc Sulfate	S	S	—	—	—	M	S	S	S

Sources: Robroy Industries Reagent Testing Lab, Corrosion Resistant Materials Handbook, 4th Edition, Noyes Data Corp., Raw Material Vendors.

TABLE 4. Specific Chemical Resistance Information Other Materials Used for Enclosure Features

			GASKETS			WINDOWS	
CHEMICAL	RIGID PVC	GLASS NYLON	NEOPRENE RUBBER	SILICONE RUBBER	URETHANE	ACRYLIC	POLYCARBONATE
Acetyldehyde	U	—	S	S	—	—	—
Acetic Acid (10%)	L	U	U	M	L	S	S
Acetone	U	S	U	S	U	U	U
Aluminum Chloride (10%)	S	U	S	S	S	S	S
Aluminum Sulfate (10%)	S	L	U	S	S	S	S
Ammonia Gas	—	S	S	S	—	S	—
Ammonium Chloride	S	U	S	S	S	S	S
Ammonium Hydroxide (10%)	S	—	L	L	S	S	U
Ammonium Nitrate (10%)	S	U	U	S	S	S	U
Ammonium Phosphate (10%)	—	L	U	S	S	S	S
Ammonium Sulfate	S	U	S	S	—	—	—
Aniline	S	L	U	U	—	S	—
ASTM #1 Oil	—	—	M	S	S	S	M
ASTM #3 Oil	—	—	U	L	S	S	M
Axle Grease	—	—	L	S	S	S	M
Benzene	U	S	U	U	—	U	—
Boric Acid (10%)	L	S	S	S	S	S	S
Bromine	U	U	U	U	U	L	U
Butyl Acetate	U	S	U	U	—	U	—
Butyric Acid	U	U	U	—	—	—	—
Calcium Chloride (10%)	S	U	S	S	S	S	S
Calcium Hydroxide (10%)	S	—	U	S	L	S	S
Calcium Hypochlorite (10%)	S	U	U	S	U	M	S
Calcium Sulfate	S	U	S	S	S	S	S
Carbolic Acid (25%)	—	—	U	U	U	U	U
Carbon Disulfide	U	—	U	—	—	S	—
Carbon Tetrachloride	L	S	U	U	U	S	U
Chlorine (dry)	L	—	—	—	—	—	—
Chlorine (water) 5-10 ppm	L	—	L	S	S	S	S
Chlorobenzene	U	S	U	U	—	L	—
Chloroform	U	U	U	U	—	U	—
Chrome Plating Solution	—	—	U	U	U	S	S
Chromic Acid	L	U	U	M	—	U	—
Citric Acid (10%)	S	L	U	S	U	S	S
Copper Sulfate	S	L	S	S	—	U	—
Creosote	—	U	U	U	—	—	—
Cutting Fluid (5 Star) 10%	—	—	U	S	S	S	M
Cutting Fluid (Castrol 980 H)	—	—	L	S	S	S	L
Cutting Fluid (Norton 205)	—	—	S	S	S	S	S

TABLE 4. Specific Chemical Resistance Information Other Materials Used for Enclosure Features

			GASKETS			WINDOWS	
CHEMICAL	RIGID PVC	GLASS NYLON	NEOPRENE RUBBER	SILICONE RUBBER	URETHANE	ACRYLIC	POLYCARBONATE
Cutting Fluid (Rustlick) 10%	—	—	S	S	S	S	S
Cutting Oil (Dark)	—	—	U	S	S	S	S
Diethyl Ether	U	—	—	U	—	U	—
Ethyl Alcohol	S	—	L	S	S	U	M
Ethylene Dichloride	U	—	U	U	—	U	—
Ethylene Glycol	S	—	S	S	S	S	S
Ferric Chloride	S	U	L	S	L	S	S
Ferric Nitrate	S	U	S	M	—	—	—
Ferric Sulfate	S	U	S	M	—	—	—
Fluorine	L	—	—	U	—	—	—
Formaldehyde	L	U	U	M	—	S	—
Formic Acid	L	S	U	L	L	U	S
Fuel Oil (#2)	S	—	U	U	U	S	S
Gasoline	S	S	U	L	—	S	—
Glycerine	S	S	S	S	—	S	—
Hydraulic Brake Fluid	—	—	U	S	U	U	U
Hydraulic Oil	—	—	U	S	S	S	M
Hydrochloric Acid (10%)	S	U	L	L	U	S	S
Hydrocyanic Acid	S	—	S	M	M	—	—
Hydrofluoric Acid (20%)	L	U	U	U	—	S	M
Hydrogen Peroxide	S	U	U	M	—	S	—
Hydrogen Sulfide	S	—	U	M	—	—	—
Hypochlorus Acid	—	—	—	—	—	—	—
Isopropyl Alcohol	—	—	S	S	S	S	S
Kerosene	S	—	U	U	S	S	M
Lacquer Thinner	—	S	U	S	L	U	U
Lactic Acid	S	L	L	—	—	L	—
Lime	—	—	S	M	—	—	—
Liquid Dish Soap (10%)	S	—	L	S	S	S	S
Lubricating Oils	—	—	U	U	—	S	—
Magnesium Chloride (10%)	S	S	S	S	S	S	S
Magnesium Hydroxide (10%)	S	—	S	S	S	S	S
Mercuric Chloride (10%)	L	—	U	L	U	S	S
Methyl Ethyl Ketone	U	S	S	U	—	L	—
Methylene Chloride	—	U	U	S	U	U	U
Milk	S	—	S	S	—	S	—
Mineral Oil	S	—	L	M	—	S	—
Mineral Spirits	—	—	U	U	S	S	M
Motor Oil (10 weight)	—	—	U	U	S	S	S

TABLE 4. Specific Chemical Resistance Information Other Materials Used for Enclosure Features

			GASKETS			WINDOWS	
CHEMICAL	RIGID PVC	GLASS NYLON	NEOPRENE RUBBER	SILICONE RUBBER	URETHANE	ACRYLIC	POLYCARBONATE
Nickel Salts	S	—	U	S	—	—	—
Nitric Acid (10%)	S	U	U	U	U	S	L
Nitrobenzene	U	S	U	—	—	—	—
Oleic Acid	S	U	—	U	—	—	—
Perchlorethylene	—	—	U	S	U	U	U
Phosphoric Acid (25%)	S	U	S	S	U	S	S
Phosphoric Acid (50%)	S	U	S	S	U	S	S
Pickling Solution	—	—	L	M	M	S	S
Potassium Carbonate (10%)	L	S	S	S	S	S	S
Potassium Chloride (25%)	S	L	S	S	S	S	S
Potassium Hydroxide (25%)	S	S	U	L	M	U	U
Potassium Nitrate (10%)	S	L	S	S	S	S	S
Potassium Sulfate (10%)	SL	S	S	S	S	S	S
Soap (Igepal) 10%	S	—	U	S	S	S	S
Sodium Bicarbonate (10%)	S	S	S	S	S	S	S
Sodium Bisulfate (10%)	S	L	S	S	L	S	S
Sodium Chloride (25%)	S	S	S	S	S	S	S
Sodium Hydroxide	S	S	U	U	M	S	U
Sodium Hypochlorite	S	U	U	S	U	S	S
Sodium Nitrate (10%)	S	S	S	S	S	S	S
Sodium Phosphate (10%)	S	—	U	S	S	S	S
Sulfuric Acid (25%)	S	U	S	S	U	S	S
Sulfurus Acid (10%)	S	—	U	U	L	S	S
Tannic Acid ((10%)	S	U	U	L	U	S	S
Tetrahydrofuran	—	S	U	U	U	U	U
Toluene	U	S	U	U	U	U	U
Trichloroethylene	U	U	U	U	—	U	—
Trisodium Phosphate	S	—	—	—	—	—	—
Turpentine	—	S	U	L	U	S	S
Vegetable Oils	S	—	L	S	—	S	—
Vinegar	—	S	L	S	—	S	—
Water, Industrial	S	—	S	S	S	S	S
Water, Rain	S	—	S	S	S	S	S
Water, Sea	S	—	S	S	S	S	S
Water, Tap	S	—	S	S	S	S	S
Xylene	—	S	U	M	U	S	U
Zinc Acetate	—	—	—	U	—	—	—
Zinc Chloride	S	U	M	S	U	S	M
Zinc Sulfate	S	L	S	S	—	—	—

Sources: Robroy Industries Reagent Testing Lab, Corrosion Resistant Materials Handbook, 4th Edition, Noyes Data Corp., Raw Material Vendors.

Physical Properties of Non-Metallic Materials

Table 7 provides technical data for assistance in evaluating non-metallic enclosures and commonly used accessory materials.

TABLE 7. Physical Properties of Non-Metallic Materials

MATERIALS TYPICAL PROPERTIES	TEST METHOD ASTM	POLYESTER FIBERGLASS (SMC)	POLYESTER FIBERGLASS HAND LAY-UP	POLYESTER FIBERGLASS PULTRUSION	ACRYLIC SHEET FOR WINDOWS	DISPENSED SILICONE GASKETS	FOAMED URETHANE GASKETS	EXTRUDED SILICONE GASKETS	NEOPRENE GASKETS	POLY-CARBON-ATE	PVC
Flexural Strength (psi)	D 790	17K	30K	45K	16K	N/A	N/A	N/A	N/A	15k	12.8k
Notched Izod (ft - lb/in @ 1/8")	D 256	7-22	5-30	25	0.3-0.4	N/A	N/A	N/A	N/A	13	1.3
Impact Resistance (lb-in)	UL 746C	≥216	—	—	—	N/A	N/A	N/A	N/A	--	--
Compressive Strength (psi)	D 695	20K	35K	26K	18K	N/A	N/A	N/A	N/A	12k	10.8k
Tensile Strength (psi)	D 638	8K	17.5K	40K	10.5K	200	60	100	50	9.5k	7.5k
Specific Gravity	D 792	1.71	1.5-2.1	1.7	1.17-1.20	1.32	0.3	0.55	1.24	1.20	1.41
Flammability	UL 94	V-0 5V	—	V-0	94HB	—	—	—	—	H-B, V0	V0
Heat Deflection (°F at 264 psi)	D 648	375-500	>400	<400	205	N/A	N/A	N/A	N/A	270	176
Service Temperature Range (°F)		-76°F to +274°F	-76°F to +274°F	-40°F to +250°F	-31°F +180°F	-40°F to +350°F	-40°F to +200°F	-100°F to +500°F	-40°F to +225°F	-20° to +240°	-4°F to +140°F
K Factor, Thermal Conductivity (BTU/hr/ft2/°F/in)		1.68	1.68	1.68	1.3	1.3	1.0	1.3	1.45	1.3	0.90
Dielectric Strength (VPM)	D 149	380	380	200	500	400	330	400	400	390	544
Arc Resistance (sec)	D 570	200+	200+	80	No Track	N/A	N/A	N/A	N/A	117	--
Water Absorption (% in 24 hr)	D 570	0.10-0.25	0.05-0.5	0.05-0.5	<0.4	0.12-0.15	<2	5	—	0.12	<0.07
Hardness (Barcol-Rockwell M-Shore A)		50-70 Barcol	60-80 Barcol	50 Barcol	105 Rockwell	18 Shore	8 Shore	—	15-95 Shore	M70/R118	R115
Shrinkage in/ in Minimum		.005	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.006	--
Elongation (%)		N/A	N/A	N/A	N/A	850	100	400	100-800	N/A	50-150
Compression Set 24 hr @ 50%, 72°F		N/A	N/A	N/A	N/A	<5%	<2%	<5%	15-60	N/A	--

-- no test data available
K = 1000
N/A not applicable

Stahlin offers no guarantee or warranty as to the applicability of this chart on a particular situation as the actual conditions of use on our enclosures are beyond our control.

Appendix

Physical Properties of Non-Metallic Materials

Enclosure Weight Load Capacity

Large control enclosures 20" x 16" and above can support 200 lbs. of equipment on the back panel. Smaller-junction enclosures 18" x 16" and below should be limited to 75 lbs. Listed values assume the enclosure is vertically mounted against a reasonably flat surface and are based on a minimum safety factor of two.

Sunlight (UV) Resistance

In time sunlight may roughen the fiberglass enclosure surface, but its **electrical and mechanical properties remain unaffected.** Surface roughening caused by UV exposure is a common phenomenon encountered with virtually all fiberglass products, but it only affects surface appearance. Tests have confirmed the effect on polyester fiberglass is only 40 to 80 microns (0.0015"-.003") in depth. If appearance is a concern, an outdoor acrylic paint (clear or pigmented) will provide protection for many years. Most acrylic paints in ordinary spray cans work well.

Stahlin fiberglass enclosures are molded using a patented material formulation (SolarGuard®) which can provide up to 60% more UV resistance.

Flammability Test Methods

UL94-HB

Test is run with bars 1/2 of an inch wide and five inches long. These are held horizontally and exposed to a flame 3/4 of an inch high. Ignition is forced until one inch of sample has burned, the flame removed and the burning rate is measured. To pass UL94-HB a sample over 1/8 of an inch thick must burn slower than 1-1/2 inches per minute, and a sample 1/8 of an inch thick or less must not burn faster than 3 inches per minute.

UL94-V0

Test is run with bars 1/2 of an inch wide and five inches long, held vertically with a flame size of 3/4 of an inch high. Each sample is ignited for ten seconds, the flame allowed to go out and ignited for a second time of ten seconds. To pass UL94-V0 the flame must be out in ten seconds or less, no glow beyond thirty seconds and no burning material can fall.

UL94-5V

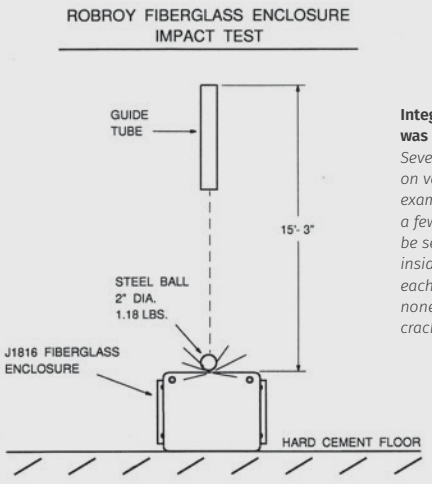
This is a newer and tougher version of UL94 test. The sample size remains the same, but the flame size increases to five inches from 3/4 of an inch and number of ignitions increases from two to five, but the duration is decreased from ten to five seconds. To pass UL94-5VA the flame must be out in sixty seconds or less, no burning material can fall and the flame cannot penetrate through the test sample.

Drilling, Sawing, Cutting and Punching

Installers find fiberglass easy to cut or drill. Ordinary drills, hacksaws, hole saws and punches cut through fiberglass with little effort. In large installations requiring many holes, glass abrasion may cause tools to become dull over time. Carbide tip tools work best for such applications.

Impact Resistance

Stahlin fiberglass enclosures are quite resistant to damage caused by falling tools or flying debris. When tested in accordance with UL Standard 746C, Section 24, these fiberglass enclosures withstood an impact in excess of 216 pound-inches. The test was performed by dropping a 2" diameter solid steel ball on various areas of the enclosure from a height of 15 ft. The impact force from such a test is comparable to dropping a large wrench from 3 or 4 ft. The durability results from randomly oriented glass reinforcing fibers incorporated in all designs.



Integrity of the enclosure was not compromised.
Several boxes were impacted on various areas. When examined after impact, a few glass fibers could be seen protruding from inside the enclosures. At each impact site, however, none of the enclosures were cracked or penetrated.

Security

Safety

Enclosures may contain the controls or elements of a control system which are crucial to the safety of many people. Control enclosures in large chemical plants, electrical generating facilities, airports, mass transit systems or hospitals can house equipment critical to the well being of numerous individuals. In these and many other applications, rigorous security requirements are designed to protect the public and prevent unauthorized or accidental operation of control equipment.

Location

If the enclosure will be installed in a fenced area, within a building or in other secure areas, the security requirements will be affected. The selection of latches and hinges can be influenced by the location of adjacent equipment or other enclosures.

Appearance

Enclosure appearance can be influenced by both hinges and latches. Some enclosures are designed with hidden hinges and quarter turn latches to make these features less prominent.

Hinges & Latches

Access frequency – daily or annually can be an important factor in specifying the type of latches. Will the location or any specifications require a tool for opening, will it require a padlock are other considerations for latches. In many cases when the enclosure is selected the hinge type is automatically selected because the hinge is an integral part of the enclosure. For some enclosures it is possible to select the hinge or hinge less options available.

Monetary Loss

In some applications the monetary value of the equipment in an enclosure may be sufficient to justify additional security costs. In most applications, the economic consequences of unauthorized or accidental operation of a control system will be more significant than the value of the equipment.

Myth: It is much easier for vandals to get into a non-metallic enclosure vs. a metal enclosure.

Truth: An individual can simply break the lock, NOT the box, no matter the material. Various hinge and latch combinations are available to secure the contents of an enclosure. Although the security requirements will be unique for each application, the selection process should include at least the following considerations.

Temperature Control

Overview

Electrical and electronic components are continually being reduced in size allowing designers to place more equipment in a smaller space. This concentration of equipment generates higher internal temperatures and makes heat dissipation very important. Overheating causes electrical insulation to deteriorate and shortens the life of electrical and electronic components. As a rule of thumb, for every 18°F (10°C) above room temperature (72°F or 22°C) an electronic device operates, its life expectancy is reduced by 50%.

Enclosure Materials

The following information applies to gasketed and unventilated enclosures. Exterior surface finishes significantly influence temperature rise. Fiberglass and painted steel enclosures dissipate heat better than unfinished aluminum or stainless steel enclosures because the fiberglass and painted steel surfaces are more efficient thermal radiators than the unfinished surfaces. In outdoor applications light colored enclosures such as white have a high reflectance which minimizes solar heat gain compared to dark colored enclosures.

Enclosure Surface Area

The total surface area of the enclosure directly influences heat dissipation. The larger the total surface area the lower the temperature rise will be.

To calculate the total internal surface area in sq ft use the following equation:

*Surface Area = 2[(AxB)+(A*C)+(BxC)] / 144 where the specific enclosure inside dimensions are A x B x C.*

This equation uses all six (6) sides of an enclosure. If any particular side is not available for transferring heat (example the back is mounted against a cement wall) that surface area should be subtracted from the total surface area available. Also note, enclosure volume cannot be substituted for enclosure area.

Enclosure Heat Input

The heat generated in an enclosure varies and depends on the equipment mounted in the enclosure and the application. In order to calculate Temperature Rise, this heat input or power input must be known. This information can be obtained from the component manufacturers of components to be installed in the enclosure.

Enclosure Temperature Rise (ΔT)

Enclosure temperature rise is the temperature difference between the air inside a non-ventilated or cooled enclosure and the ambient air outside the enclosure. The enclosure temperature rise is independent of the ambient temperature; it is dependent on the heat generated within the enclosure and the actions taken to dissipate that heat. To establish the maximum service temperature, the temperature rise value from the graph in Figure 1, must be added to the maximum ambient temperature surrounding the enclosure.

Example:

Max ambient T = 130°F
Internal Heat Load = 15 watts/sqft or 50°F estimated from Figure 1
Calculated Maximum Service Temperature = (130°F + 50°F) = 180°F

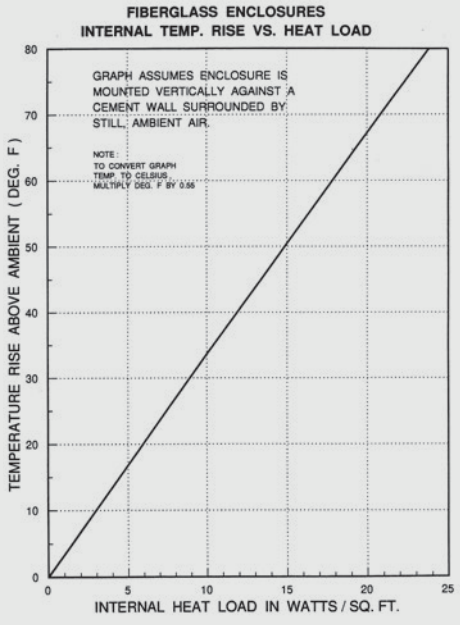


FIGURE 1: *The temperature graph was developed through empirical testing using several enclosures of various sizes. The temperatures represent an average of one temperature measurement near the bottom of the enclosure and a second measurement near the top. Electric heaters mounted equidistant from the internal surfaces of the enclosure were used as the heat source. Because hot air rises, a significant temperature gradient occurred from top to bottom. Typical of an actual installation, the top was much hotter than the bottom.*

TABLE 1. Approximate Enclosure Internal Surface Areas for Popular Enclosure Sizes

FIBERGLASS ENCLOSURES					
CAT. NO.	INTERNAL AREA SQ. FT.	CAT. NO.	INTERNAL AREA SQ. FT.	CAT. NO.	INTERNAL AREA SQ. FT.
N16107	5.37	N30247	17.08	J1407	3.27
N20166	7.98	N302410	19.53	J1412	4.24
N20168	8.98	N302412	20.95	J1614	5.36
N201610	9.97	N302414	22.50	J1816	7.77
N201612	10.98	N302416	24.06	J2016	9.39
N201616	12.82	N36308	24.82	CL707	1.51
N24126	8.04	N363012	28.60	CL907	1.81
N241210	10.09	N363016	32.41	CL1109	2.82
N242410	15.72	N483612	39.87	CL1311	3.89
N30208	14.78	N483616	44.57	CL1513	5.11
N302010	16.17	J606	1.16	C2016	8.98
N302012	17.56	J806	1.45	C2412	10.09
N302014	18.95	J1008	2.01	C2424	15.72
		J1210	3.09	C3024	19.53
				C3630	26.71

Influences of Heat Transfer

Convection and thermal radiation are used most often to dissipate heat from enclosures. Because fiberglass is used as a thermal insulator, a common misconception exists that fiberglass enclosures operate at significantly higher temperatures than metal enclosures. To the contrary, performance data reflect that enclosure material has little influence on the operating temperature and confirm that non-metallic and painted metallic enclosure function at nearly the same temperature with the same internal heat load. Based on these observations material thermal conductivity is not a major factor in determining heat transfer for an enclosure.

Even though the thermal conductivity of the composite plastic is much less than aluminum or steel, the heat transfer characteristic of fiberglass and metal enclosures are similar. Other factors such as the high thermal insulation of air contained within the enclosure along with the finish, color and total surface area of the enclosure have more influence on heat transfer than thermal conductivity. In general the finish and color of an enclosure most affect the heat transfer capability for indoor and outdoor applications.

Thermal conductivity is commonly measured in BTU/hr/ft²/°F/in, the K Value. K units represent the quantity of heat, which can pass through one square foot of material in one hour for every °F in temperature difference across one inch of material thickness. Larger K values indicate better heat conductivity. The K value for fiberglass is 1.68; the K value for steel is 334; and the K value for aluminum is 1050.

The heat transfer factor (Q) is measured in BTU/hr/ft²/°F or watts/ft²/°F. For the analysis in this section the Q value used for steel enclosures is 1.25 BTU/hr/ ft²/°F (0.37 watts/ft²/°F); for fiberglass enclosures the Q value is 0.62 BTU/hr/ft²/°F (0.2 watts/ft²/°F). The Q value for sheet metal enclosures will vary between 1 BTU/hr/ft²/°F (0.29 watts/ft²/°F) and 5 BTU/hr/ft²/°F (1.46 watts/ft²/°F), depending on the amount of enclosure insulation.

Air as an Insulator

If metals have much better thermal conductivity, why does equipment in a fiberglass enclosure operate at nearly the same temperature as in metal enclosures? The air confined within the enclosure has a K value of 0.017, almost 100 times less than fiberglass. The thermal resistance of the air and the enclosure wall material are in series and must be added. Because air is a superior thermal insulator compared to either fiberglass or steel, it is a predominant factor in establishing heat dissipation. This helps explain why equipment operates at the same temperature regardless of which enclosure material is used and also why environmental control systems heat or cool the air to control the internal temperature.

Surface Area as a Factor

Another factor, which directly influences heat dissipation, is surface area. If the enclosure surface area is doubled with a given internal heating load, the temperature rise will only be half as great. It is important to remember that surface area is not necessarily related to enclosure volume, i.e., an enclosure having twice the surface area does not always have twice the volume.

Other Related Issues

Certain applications may require the walls of an enclosure to act as a heat sink. For example, it is not uncommon to locate a high power semiconductor on the wall of a metal enclosure to dissipate heat. Fiberglass will not perform this function efficiently because the compression-molded walls have negligible thermal conductivity. In this application conduction is used to dissipate the heat and a fiberglass enclosure will not function the same as a metal enclosure.

Calculating Temperature Rise

Enclosure temperature rise can be approximated using the following steps and calclulations:

1. Calculate the internal surface area
   a. (some common enclosure sizes and areas are already calculated and can be found in Table 1.
   b. Using the Enclosure Surface Area formula on page 173
2. Determine the Input Power by dividing the expected heat load by the internal surface area
3. Then using Figure 1, estimate the temperature rise by finding where the Internal Heat Load value intersects the line and reading the approximate temperature rise on the left vertical axis of the graph.

   Note these are approximations, safety factors should be considered to minimize uncertainties.

Example:

A J1816 enclosure contains a device that generates 120 watts, calculate the internal temperature rise.

Solution:

1. *Surface Area = 7.77sqft from Table 1 (alternate method for any size use calculation on page 357 for Internal Surface Area)*
2. *Internal Heat Load = 120 watts / 7.77 sqft = 15.44 Watts/sqft*
3. *Using Figure 1, Input Power of 15.44 intersects the diagonal line corresponds to a temperature rise of 51° F above ambient*

Additional Cooling Methods

When it has been determined that the heat load is too large for an enclosure to dissipate by radiation and convection, the following supplemental cooling methods are available:

Breather Vents and Louver Vents

Breather Vents and Louver Vents are designed to remove heat from the enclosure by allowing natural air circulation around the heat source and ex-hausting the hot air through slots or louvers. This method is relatively inexpensive and has no operating cost; however, it can only be used to dissipate a limited amount of heat and it is difficult to predict the temperature drop produced by a vent utilizing natural convection.

Circulating Fans

In larger sealed enclosures a fan can be used to circulate the air and reduce localized heat concentrations; however, the applications are limited because a closed system fan only redistributes heat, it does not dissipate the heat generated by the hot spot.

Where an enclosure does not need to be sealed from the outside environment, fans can be used to circulate air through an enclosure and dissipate the heat generated by power supplies, transformers and other heat producing equipment. Fans can provide as much as 10 times the heat transfer rate of natural convection a radiation. Once the heat input in watts/ft^2 is determined and temperature rise is established from Figure 1, the following equation can be used to calculate the fan flow rate:

Fan Flow Rate (CFM) =
3.17 x Internal Heat Load (watts Temperature Rise

Example:
Equipment in an N363012 enclosure generates sufficient heat to require a fan, which will dissipate 300 watts. The maximum ambient temperature in the application environment is 115°F. If the temperature of the other contents in the enclosure cannot exceed 125°F, what size is required?

The allowable temperature rise is 125°F - 115°F = 10°F. The application requires dissipation of 300 watts.

Solution:
To determine the cubic feet per minute (CFM) required in a standard application, use the following equation (if the air density is significantly more that 0.075 lb. per cubic foot, a non-standard application exists and this equation should not be used):

Fan Flow Rate (CFM) = 3.17 x 300 watts/10°F
Fan Flow Rate (CFM) = 95 CFM

This calculation is exact, but adding an additional 25% capacity to the CFM level is standard to provide a safety factor.

1.25 x Fan Flow Rate (CFM) = 1.25 x 95 CFM = 119 CFM

If the air density is non-standard (significantly more than 1.075 lb. per cubic foot), the following equation can be used to calculate the fan capacity:

Fan Flow Rate (CFM) x 0.075 lb. per cubic foot /
Non-standard Air Density (lb. per cubic foot)

Fans can be used to draw air through an enclosure insert, exhaust hot air from an enclosure or to draw cool air into an enclosure. An inlet fan offers the following advantages:

- Raises the internal pressure, which helps keep dust and dirt out of an unsealed or frequently open enclosure.
- More turbulent airflow improves heat transfer.
- Longer fan life with cooler incoming air.

The following considerations are important in locating a fan:

- Avoid placing transformers, power supplies or other heat generating devices in front of the fan. Although this cools the device, it increases the heat load on other devices within the enclosure. It is best to place these devices near the exhaust outlet.
- To achieve maximum cooling, the inlet and outlet should be separated by the maximum distance. If the outlet and inlet are adjacent to each other, the hot outlet air will be drawn into the inlet and cooling efficiency will be reduced. In general the inlet should be at the bottom of the enclosure and the outlet at the top.
- Fans should not be used or located in areas where the airflow is restricted. A plenum is recommended to accelerate air velocity and improve fan performance. A plenum is particularly helpful when a filter is used where airborne contaminants are a problem.
- The air outlet area should at least equal the inlet area. For best results the exhaust opening should be 1.5 times the area of the fan opening.
- Air is less dense at high altitudes. For this reason airflow should be increased in high altitude applications.
- All fans used in parallel should be identical.

Heat Exchangers – Cooling

Heat exchangers are a good option when precise control of heat and humidity are not required and the heat transfer requirements are significant. The required heat exchanger capacity can be calculated using the formula,

Heat Exchanger Capacity (watts/°F) = *Internal Heat Load/ΔT + 0.22 x Enclosure Surface Area, Where ΔT = Temperature Rise*

Example:
If the internal heat load is 1000 watts in an N603616 Fiberglass enclosure, what is the minimum cooling capacity for the heat exchanger unit? The Maximum ambient temperature is 130°F and the internal equipment will malfunction if the internal enclosure temperature exceeds 105°F.

Solution:

Internal Heat Load = 1000 watts
Maximum Temperature Differential = T_i - T_o =105°F-130°F = -25°F = [25°F], use Absolute Value.
Enclosure Surface Area = 53.49 ft^2

Heat Exchanger Capacity =
1000 watts/(25°F) - 0.22 x 53.49 ft^2 = 28.23 watts/°F

In this example the surface area acts to cool the enclosure and is subtracted, the Absolute Temperature Value is used because this is a temperature difference.

Air Conditioning-Cooling

Air conditioning will be required in high ambient temperature locations where precise temperature control and humidity reductions are required in a sealed enclosure. Air conditioning can also be required where neither convection, thermal radiation, louvers, slots nor a circulating fan system provide adequate cooling. Because air conditioners remove moisture from the enclosure, a condensate drain is generally required.

The four-step process to size and select the air conditioner is influenced by the internal heat load, enclosure size and the application environment. The following information is required:

Step 1. Determine the Internal Heat Load

Heat generated by all sources within the enclosure shall be added together to establish the internal heat load in watts. The heat load in watts may be multiplied by 3.413 to convert to BTU/hr.

Internal Heat Load =_____ watts X 3.413 =_____ BTU/hr.

Step 2. Calculate the Surface Area of the Enclosure

For an enclosure size not shown in Table 1, the surface area can be calculated by using this formula.

SURFACE AREA = [2(AxB)+2(AxC)+2(BxC)]/144 IN² = AREA IN SQUARE FEET

If the enclosure is mounted on a wall or against another enclosure, the surface area calculation may be modified as identified in Table 2.

Step 3. Establish the Temperature Differential

The temperature differential (ΔT) is calculated by subtracting the maximum allowable temperature inside the enclosure (T_i) from the maximum ambient temperature outside the enclosure (T_o).

$T_o - T_i = \Delta T =$ _____ °F

Step 4. Calculating the Required Air Conditioning Capacity

The values determined in the first three steps are used to calculate the required capacity of the air conditioner according to the following formula:

Cooling Capacity (BTU/hr) = Surface Area x DT x Q + Internal Heat Load, where Q = 0.62 BTU/hr/ft2/°F (0.2 watts/hr/ft2/°F) for fiberglass enclosures.

Example:

If the internal heat load is 500 watts in an N20168 fiberglass enclosure, which is wall mounted, what is the cooling capacity required for the air conditioning unit? The maximum ambient temperature is 125°F and the internal equipment will malfunction if the internal enclosure temperature exceeds 110°F.

Step 1: *Internal Heat Load = 500 watts = 3.413 x 500 watts = 1707 BTU/hr*

Step 2: *From Table 1, Total Surface Area = 8.98 ft°*

Step 3: *Temperature Difference:*
$T = T_o - T_i$ = 125°F - 110°F = 15°F

Step 4: *Air Conditioner Capacity*
8.98 ft² x 15°F x 0.62 BTU/hr/fr²/°F + 1707 BTU/hr = 1790.5 BTU/hr

8.98 ft² x 15°F x 0.2 watts/ft² +500 watts = 526.9 watts

Air Conditioning – Heating

Some enclosure systems have minimum as well as maximum operating temperature limitations. When the equipment in an enclosure must be maintained above a minimum temperature at low ambience, these same equations can be modified and used to calculate the supplemental heat required to select and size the heaters. The only differences are that the internal heat load will help heat the enclosure and the temperature difference, DT, is calculated by subtracting the minimum ambient temperature (To) outside the enclosure from the required temperature (Ti) inside the enclosure. The minimum supplementary heat can be calculated according to one of the following equations:

$\Delta T = T_o - T_i$

Supplementary Heat = [Surface Area x (ΔT - 1)] /4.1
or = Surface Area x ΔT x Q
where Q = 0.2 watts/ft2 °F

Example:

If the internal heat load in 100 watts in an N20168 Fiberglass enclosure, which is wall mounted, what is the minimum heating capacity for the heating elements? The minimum ambient temperature is 0°F and the internal equipment will malfunction if the internal enclosure temperature drops below 40°F.

$\Delta T = T_o - T_i$ = 40°F -0°F = 40°F

Supplementary:

Heat = [8.98 ft² x (40°F -1)] /4.1 = 85.4 watts
- or -
8.98 ft² x 40°F x 0.2 watts/ft² °F = 71.84 watts

Two Commonly used, but different, equations shown above have been used to show the effect of using different heat transfer values.

In addition to heating, supplementary heaters are often used in enclosures to keep the internal enclosure ambient temperature a few degrees above the ambient temperature to prevent condensation on internal equipment.

TABLE 2. Calculation of Enclosure Surface Area Depending on Location

ENCLOSURE CONFIGURATION	POSITION	FORMULA FOR SURFACE AREA	SURFACE AREA OF N20168
Single Enclosure, Free Standing	■	[2(AxB) + 2(AxC) + 2(BxC)]/144	8.98 ft²
Single Enclosure, Free Standing*	■	[1.8(AxB) + 1.8(AxC) + 1.4(BxC)]/144	7.66 ft²
Single Enclosure, Against a Wall	▨ ■	[1.4(BxA) + 1.4(BxC) + 1.8(CxA)]/144	6.78 ft²
Side by Side Enclosures; First or Last Enclosure in Bank of Enclosures	■ □ □	[1.4(CxA) + 1.4(BxC) + 1.8(BxA)]/144	7.16 ft²
Side by Side Enclosures; First or Last Enclosure in Bank of Enclosures Against Wall	▨ ■ □ □	[1.4(AxB) + 1.4(AxC) + 1.4(BxC)]/144	6.28 ft²
Side by Side Enclosures Not at the End of Enclosure Bank	□ ■ □	[1.8(AxB) + 1.4(BxC) + (AxC)]/144	6.65 ft²
Side by Side Enclosures within an Enclosure Bank, Bank Against a Wall	▨ □ ■ □	[1.4(AxB) + 1.4(BxC) + (AxC)]/144	5.77 ft²
Side by Side Enclosures within an Enclosure Bank, Bank Against a Wall & Roof Above	▨ □ ■ □ □	[1.4(BxA) + 0.7(BxC) + (CxA)]/144	5.05 ft²

**Depending on the enclosure design, the complete surface area may not be exposed for cooling. This formula and the remaining ones are conservative and account for such differences.*

EMI/RFI Shielding

The requirements and standards for enclosure electromagnetic compatibility are continually increasing with the proliferation of electronics for industrial process control, information processing, and communication equipment. In the United States the Federal Communications Commission establishes the requirements and regulates the amount of electromagnetic interference, (EMI). Since January 1, 1996 the European Union (EU) has enforced legislation, Electromagnetic Compatibility (EMC) Directive 89/336/EEC, which regulates the amount of EMI and Radio Frequency Interference (RFI) that products can emit or must repel to function acceptably.

While the enclosure itself is not covered by these requirements, once the electronic equipment is installed within the enclosure, the package must comply with applicable EMI/RFI directives. Shielding and electromagnetic compatibility are highly specialized with their own terminology. The following definitions will help to specify EMI/RFI compatibility and select enclosures if the acronyms and technology are unfamiliar:

Attenuation A measure of the ability to contain or repel EMI/RFI energy. It can also be called shielding effectiveness and is usually expressed in decibels (dB).

Decibel (dB) Unit to express the effectiveness of a material or system in reducing electromagnetic interference. If a shielded enclosure reduces the EMI by 30 dB, the power of the interfering wave will be reduced by a factor of 1000 in passing through the enclosure. If the EMI reduction is 40 dB, the power is reduced by a factor of 10,000. The equation for calculating attenuation in decibels is dB = 10 log10 (P1/P2) where P1 = power of the interference wave before it passes through the enclosure, P2 = power of the wave after it has been reduced (attenuated) by the enclosure.

Electromagnetic Emission Electrical energy radiated into the environment intentionally by an antenna or incidentally by an electronic component or power equipment during a switching operation.

Electromagnetic Field Invisible fields which surround energized conductors such as wires and antennas. A field has both electric and magnetic components.

Electromagnetic Immunity The capability of an electronic component or electrical equipment to perform its intended function in the presence of external electromagnetic fields.

EMI (ElectroMagnetic Interference) Randomly radiated electrical energy which can emanate from high voltage equipment or power lines, welding equipment, switches, relays, spark plugs, or any device that generates an electric spark or corona. The random voltages or currents generated by these sources are coupled to electronic systems with undesirable results. EMI waves are not well ordered, vary widely in intensity, and cause interference over a wide frequency range. The sun is a natural generator of EMI.

EMC (ElectroMagnetic Compatibility) The ability of electronic equipment to perform its intended function in the presence of EMI and RFI disturbances without affecting proper operation.

EMP (ElectroMagnetic Pulse) Interference caused by a large and sudden electrical discharge such as lightning. EMP is short in duration but can radiate intense power. Like EMI, EMP is not well ordered and causes interference over a wide range of frequencies.

Ohms per Square A measurement unit for electrical continuity of the metal coating applied internally to fiberglass enclosures for EMI/RFI shielding. Although the coating thickness influences shielding to some extent, the electrical continuity is much more important. The conductive coating on Stahlin Enclosures typically measures less than 2 ohms per square. The surface resistance (or conductivity) measurement is without units because the surface area does not influence the reading, i.e., measurements taken on a large sheet of conductive material will yield the same result over 1sq in, 1 sq. ft, 1 sq. yd., or 1 sq. meter.

RFI (Radio Frequency Interference) Interference caused by radio waves which emanate from commercial radio and television stations, amateur radio broadcasts, radar, microwave ovens, etc. Radio waves are usually well defined in terms of amplitude and frequency.

Military specification, MIL-STD-285, is used to test the shielding effectiveness of Stahlin Enclosures. The procedure involves placing a transmitting antenna within the enclosure and a receiving antenna outside the enclosure. Measurements are then made alternately with the enclosure door/cover open and closed. The difference between the open and closed measurements expressed in dB is the shielding effectiveness. Measurements are usually made at 10 frequency points ranging from 0.01 to 1000 MHz.

Depending on the enclosure design and frequency of the EMI/RFI, the attenuation of a standard Stahlin non-metallic enclosure without modification will vary between 0 and 20 dB.

Fiberglass enclosures interior surfaces can be coated with a highly conductive nickel coating that provides excellent EMI/RFI shielding. The coating has been tested by an independent test laboratory and provides an average attenuation of 60 dB over the frequency range from 0.01 to 10000 MHz.

The fiberglass coating description and properties are provided in the following table:

EMI/RFI Shielding Notes

Shielding Material	Copper
Sheet Resistance	> 2.5 Ohms/Square
Attenuation	> 75 dB
Frequency Range	1-1000 MHz

What is Torque?

Torque is the tendency of a force to rotate an object about an axis. Just as a force is a push or pull, a torque can be thought of as a twist. Loosely speaking, torque is a measure of the turning force on an object such as a bolt. The unit of measure is generally expressed in foot pounds or inch pounds

The formula for torque is:

$\tau = r \times F$

where:

τ *is the torque*

r = the length of the lever arm

F = the force

Properly fastened threaded products achieve their holding power from the tension (or torque) that is derived from the mating of the external and internal threads subject to the elastic limit of the material.

What torque to apply is a generally asked question, but the answer depends on the variables of material, threads' class of fit, method of thread manufacture, and thread lubrication – if any.

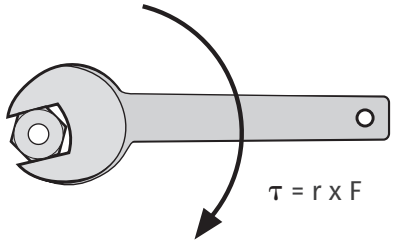
Table 3 (next page) is offered as the suggested maximum torque values for threaded products. The table is only a guide. Actual tests were conducted on dry, or near dry, products. Mating parts were wiped clean.

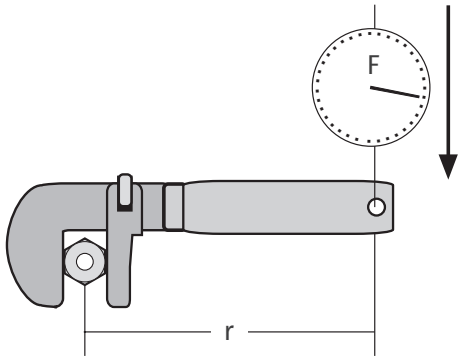
TABLE 3. Strength Characteristics

BOLT SIZE	18-8 SS	BRASS	SILICONE BRONZE	ALUMINUM 2024-T4	316 SS	MONEL	NYLON*
	In. Lbs.	In. Lbs.	In. Lbs.	In. Lbs.	In. Lbs.	In. Lbs.	In. Lbs.
2-56	2.5	2.0	2.3	1.4	2.6	2.5	.44
2-64	3.0	2.5	8.0	1.7	3.2	3.1	
3-48	3.9	3.2	3.6	2.1	4.0	4.0	
3-56	4.4	3.6	4.1	2.4	4.6	4.5	
4-40	5.2	4.3	4.8	2.9	5.5	5.3	1.19
4-48	6.6	5.4	6.1	3.6	6.9	6.7	
5-40	7.7	6.3	7.1	4.2	8.1	7.8	
5-44	9.4	7.7	8.7	5.1	9.8	9.6	
6-32	9.6	7.9	8.9	5.3	10.1	9.8	2.14
6-40	12.1	9.9	11.2	6.6	12.7	12.3	
8-32	19.8	16.2	18.4	10.8	20.7	20.2	4.3
8-36	22.0	18.0	20.4	12.0	23.0	22.4	
10-24	22.8	18.6	21.2	13.8	23.8	25.9	6.61
10-32	31.7	25.9	29.3	19.2	33.1	34.9	8.2
1/4"-20	75.2	61.5	68.8	45.6	78.8	85.3	16.0
1/4"-28	94.0	77.0	87.0	57.0	99.0	106.0	20.8
5/16"-18	132	107	123	80	138	149	34.9
5/16"-24	142	116	131	86	147	160	
3/8"-16	236	192	219	143	247	266	
3/8"-24	259	212	240	157	271	294	
7/16"-14	376	317	349	228	393	427	
7/16"-20	400	327	371	242	418	451	
1/2"-13	517	422	480	313	542	584	
1/2"-20	541	443	502	328	565	613	
9/16"-12	682	558	632	413	713	774	
9/16"-18	752	615	397	456	787	855	
5/8"-11	1110	907	1030	715	1160	1330	
5/8"-18	1244	1016	1154	798	1301	1482	
3/4"-10	1530	1249	1416	980	1582	1832	
3/4"-16	1490	1220	1382	958	1558	1790	
7/8"-9	2328	1905	2140	1495	2430	2775	
7/8"-14	2318	1895	2130	1490	2420	2755	
1"-8	3440	2815	3185	2205	3595	4130	
1"-14	3110	2545	2885	1995	3250	3730	
	Ft. -Lbs.	Ft. -Lbs.	Ft. -Lbs.	Ft. -Lbs.	Ft. -Lbs.	Ft. -Lbs.	
1-1/8"-7	413	337	383	265	432	499	
1-1/8"-12	390	318	361	251	408	470	
1-1/4"-7	523	428	485	336	546	627	
1-1/4"-12	480	394	447	308	504	575	
1-1/2"-6	888	727	822	570	930	1064	
1-1/2"-12	703	575	651	450	732	840	

**Nylon figures are breading torque, all others represent safe working torque.*
The 3/8" diameter and under metal products were roll-threaded and, where size range permitted, were made on automatic bolt making equipment.

Torque Formula Illustrations





Methods For Making Holes And Cutouts In Non-Metallic Enclosures

Drilling of composite fiberglass material has been difficult and, for some, a mystery. The ability to accurately drill holes in composite fiberglass material has been the subject matter of numerous articles and how to demonstrations. There are several types of machining operations that can be performed on composites such as turning, drilling, routing, trimming, sanding, and milling. Most of these operations are similar to metal removal techniques but there are some differences that need to be addressed in order to make clean, high quality holes and cutouts in composites.

Delaminating of the outer surface and glass fibers directly below the surface are the main failure modes noticed when holes or cutouts are drilled or cutout improperly. Most times excessive edge chipping around the perimeter of the cutout or hole is due to improper tools used and methods applied. Other times excessive fiber pulls or attached fibers not sheared off during the cutting or turning process can also cause delamination failure from the tearing action during material removal. Improper tools used and/or methods are also a culprit of this failure mode. All these can lead to downstream assembly problems, functionality problems, and become aesthetically unappealing if taken to the extreme.

The most common source of failure mode when making holes in an enclosure is a dull cutting tool. Dull tools tend to rip or tear the material rather than cutting or shearing the material and glass fibers. The main culprit for tools becoming dull is glass fibers embedded in the material. These glass fibers are very abrasive and can cause a tool to become dull very quickly. A little planning and understanding of the proper methods to machining composites up front can make all the difference in the final outcome of the operation.

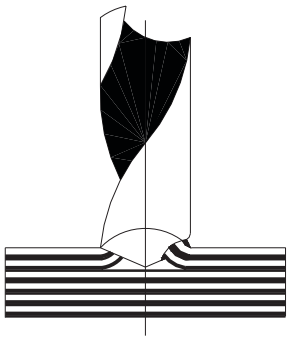


FIGURE A *Shows delamination of the surface of the part at the drill entrance.*

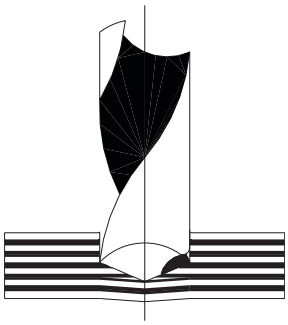


FIGURE B *Shows similar delamination just prior to drill exit.*

Installation

1. Hole Saw

The easiest and least complex method to provide an opening in a composite enclosure is to use a fine-toothed hole saw. You must first layout the size and location of the cutout, pre-drill a small hole in the center within the cutout area for the hole saw to start, and then carefully cut out the area to be removed. This is more time consuming and the least accurate method but can be accomplished in almost any environment. Keeping the saw perpendicular to the cutting surface, maintaining a consistent sawing action, and using a diamond/carbide impregnated saw or fine toothed saw will provide the highest quality cutout with minimal edge chipping.

2. Drilling, Boring

Putting round holes in enclosure walls or thru the enclosure door is the most common type of cutout. A recommended tool would be a carbide tipped or PCD diamond tipped hole saw or twist drill bit that will maintain a sharp cutting edge. HSS tools will also work but they will become dull very quickly resulting in excessive edge chipping and a poor looking hole. We also recommend using high RPM's and low feed rates when using drills. This reduces the chipping around the cutout. The single most important factor though is keeping a very sharp tool.

Using a drill with a positive rake angle and thin points or split points can help reduce cutting pressure and thus delamination at both entrance and exit. Feed rates must also be constant and may even be reduced upon exiting from a hole to reduce flexing of the part when the drill exits. Using a solid back surface to support the part when drilling can also aid in reducing delamination and chipping.

3. Routing/Cutting

A third method is to use a router bit and router or jigsaw. This method produces very clean holes and cutouts but also requires the holes and cutouts to be manually laid out beforehand and a steady hand to stay within the layout lines. The use of a jig or fixture to help guide the hand-held router or the use of CNC machining centers is helpful to keep straight edges and clean cutouts. The use of diamond impregnated router bits is preferred for longevity but carbide bits will work just as well.

4. Punching

A fourth method is to use a standard hole punch similar to what you would use with metal boxes. This produces a good clean hole but can leave chipped edges if the punch is dull. Again maintaining sharp tools is essential to producing clean cutouts. A pilot hole is required before using a standard hole punch. Manual or hydraulic punch actuators can both be used with composite materials.

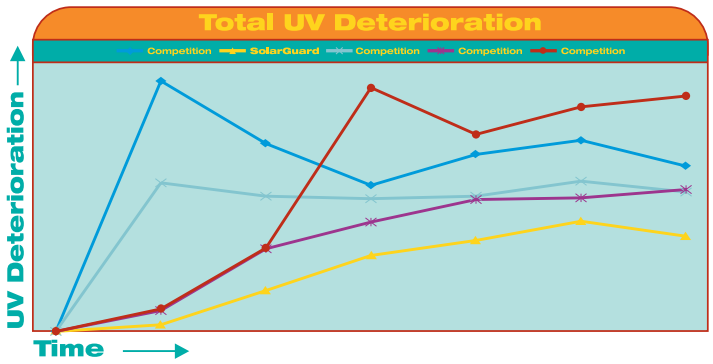
Drilling

Cutting

Layout

Holesaw Drilling

SolarGuard®



A non-haloginated fiber-glass system that beats the effects of outdoor exposure plus provides the chemical and flame resistance you've come to expect from Stahlin Fiberglass Enclosures!

SolarGuard®, in extensive comparison testing, outperformed other available SMC formulations by as much as 60% in its ability to retain gloss and color after exposure to concentrated UV light.

SolarGuard® maintained stability in thickness proving that its physical properties remain very much intact despite EMMAQUA testing that concentrates natural sunlight using 10 highly reflective mirrors to create an intensity level of approximately 8 suns!

SolarGuard® meets a NFPA No. 101 Class A flame spread index. Fire retardancy, achieved through use of alumina trihydrate fillers, meets UL 94 5V standards.

SolarGuard® is a non-haloginated system...meaning that it contains no bromine and no antimony, thereby reducing the risk of smoke-borne toxicity.

SolarGuard® requires less maintenance than paint, wax or gel-coat alternatives used to prolong the life of electrical enclosures in outdoor environments.

SOLARGUARD®

How does SolarGuard® do what it does?

SolarGuard's® patented double-protection formula was developed in Stahlin's FormRight lab.

Due to its chemical composition and other additives, **SolarGuard®** is able to reduce the effects of UV degredation such as surface roughening and fiber blooming.

How does SolarGuard® achieve this level of performance?

SolarGuard® features proprietary double-protection formulation technology that significantly enhances the molecular bond strength and crosslinking that occurs during the curing process in thermosetting polyester sheet molding compounds (SMC). Stahlin's **SolarGuard®** system fights polymer degradation by making it much more difficult for UV light to attack molecular bonds of both primary chains and crosslinks.

A special UV Absorber is added to the **SolarGuard®** formulation which acts to absorb UV energy, then to release it without damaging the polymer chain. The neopentyl glycol (NPG) isopthalic based resin system of **SolarGuard®** ensures UL 94 5V fire retardancy, but provides a much stronger bond of the polymer chain resulting in significantly improved weathering resistance.

As the standard SMC formulation for all Stahlin fiberglass electrical products, **SolarGuard®** provides an unsurpassed level of UV resistance, fire retardancy, chemical resistance and safe, durable performance...all without adding cost to Stahlin's world class electrical enclosures.

How SolarGuard® benefits you

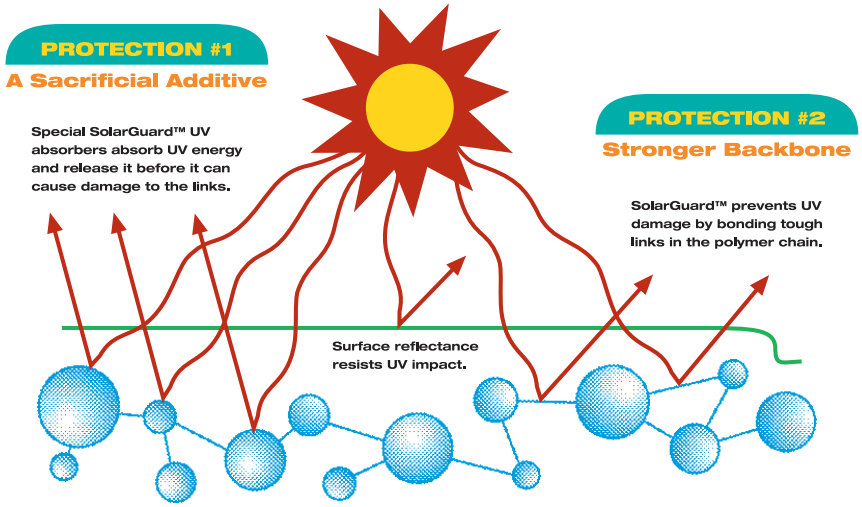
AT A GLANCE: DOUBLE PROTECTION THAT WORKS

1. The SolarGuard® way

The **SolarGuard®** formulation is a neo-pentyl glycol (NPG) isopthalic based resin system that contains no bromine. Therefore, there are no weak links in the polymer chain making the UV energy required to break these links significantly greater. The result? **SolarGuard®** SMC material provides much better UV weathering characteristics. Fire retardancy requirements are still achieved and maintained via fillers that meet UL 94 5V standards.

2. Absorption

The special UV absorber is also added into **SolarGuard®** and works to absorb UV energy and release it without damaging the polymer chain. This is achieved by absorbing UV energy and emitting the light at a different wavelength and frequency than that of the electrons in the carbon-carbon bonds. This prevents the polymer bonds from breaking apart. This material will also absorb UV energy more readily than the links of the polymer chain thus providing increased protection of the polyester material and increased resistance to the damaging effects of UV radiation.



The SolarGuard® difference

- Between a 32-and-60 % improvement, compared to other SMC formulations, in its ability to retain gloss and color after exposure to concentrated UV light.
- Material thickness remains very stable, demonstrating that the physical properties of **SolarGuard®** are still very much intact after rigorous testing.
- Excellent chemical resistance in both exposed vapor and total submersion applications.
- ASTM flame spread testing meets a NFPA No. 101 Class A (I) Flame Spread Index.
- Potential toxic emissions have been eliminated or substantially reduced from elimination of materials such as bromine, tin and antimony. Other acid gasses have been reduced or eliminated along with significant reductions of black smoke when burned. This formulation is considered to be non-haloginated.

SolarGuard® – Proof through performance

- A unique SMC system for maximizing polymer chain and crosslink bonding.
- Up to 60% more UV-resistant compared with other available formulations.
- Meets UL 94 5V Fire-Retardancy Standards plus NFPA No. 101 Class A Flame Spread Index.
- Eliminates toxic bromine and antimony.
- Available to you at NO additional finished-product cost.
- Note: Product comparison data resulting from independent, third-party accelerated testing can be obtained by contacting Stahlin Non-Metallic Enclosures.

Physical Properties of SolarGuard®

MATERIAL TYPICAL PROPERTIES	TEST METHOD ASTM	SOLARGUARD™ POLYESTER FIBERGLASS (SMC)
Flexural Strength (psi)	D 790	17K
Notched Izod (ft-lb/in @ 1/8")	D 256	11
Impact Resistance (lb-in)	UL 746C	≥216
Compressive Strength (psi)	D 695	20K
Tensile Strength (psi)	D 638	8K
Specific Gravity	D 792	1.71
Flammability	UL 94	V-0 & V-5
Heat Deflection (°F at 264 psi)	D 648	375-500
Service Temperature Range (°F)		-76°F to 274 °F (-60 °C to 134°C)
K Factor, Thermal Conductivity (BTU/hr/ft/°F/in)		1.68
Dielectric Strength (VPM)	D 149	380
Arc Resistance (sec)	D 495	190
Water Absorption (% in 24 hr)	D 570	0.10-0.25
Hardness (Barcol-Rockwell M -Shore A)		50-70 Barcol
Shrinkage in/in Minimum		.005

Note: Product comparison data resulting from independent, third-party accelerated testing can be obtained by contacting Stahlin Non-Metallic Enclosures.

SolarGuard® Flame Spread Classification Per NFPA No. 101 ASTM E162 Surface Flammability of Materials

CLASS	RANGE	TYPE	SOLARGUARD™ TEST RESULTS
Class A (I)	0 to 25	Flame Spread	Stahlin SolarGuard flame spread index 20.59
Class B (II)	26 to 75	Flame Spread	
Class C (III)	76 to 100	Flame Spread	

SolarGuard® Optical Density Test Result Summary ASTM E662 Specific Optical Density of Smoke Generated by Solid Material

	NON-FLAMING	FLAMING
Ds @ 1.5 min (avg)	0.0	0.3
Ds @ 4.0 min (avg)	0.0	9.9
Dm (corr) (avg)	10.8	181.9

SolarGuard® – Testing procedures used to ensure SolarGuard® meets or exceeds all relative industry standards

- UL 746 C Polymeric Materials Used In Electrical Equipment Evaluations
- UL 50 Enclosures For Electrical Equipment
- UL 508 Industrial Control Panels.

Additional tests have been performed above and beyond these industry guidelines to aid in providing the end user with a premium product for a broad range of uses. These tests were performed using ASTM standards and other government approved procedures. Test standards and evaluation criteria are:

- Chemical resistance testing (submerged and vapor), 37 various chemicals (acids, bases)
- ASTM E162 Flame Spread
- ASTM E662 Smoke Density
- Particulate dust weight (NIOSH 05000), Acid gases HBr, HCl, HNO3, HPO4, H2SO4 (NIOSH 7903), Cyanide (NIOSH 7904), Metals (NIOSH 7300), VOC's with TIC's (EPA TO-14/TO-15), PAH (NIOSH 5506), Carbon Monoxide, Carbon Dioxide, Visual Fiberglass (NIOSH 7400), Ammonia, NO, NO2, HS2.

Additional UV testing has been performed under the following guidelines and evaluation criteria. Exposure testing is performed in Arizona in accordance with ASTM G90-98, Spray Cycle 1 (EMMAQUA, day spray with nighttime wetting).

- ASTM G 147-96 Standard Practice for Conditioning and Handling of Non-Metallic Materials for Natural and Artificial Weathering Test
- ASTM G 90-98 Standard Practice for Performing Accelerated Outdoor Weathering of Non-Metallic Materials Using Concentrated Natural Sunlight
- ASTM D 660-93 Method for Evaluating Degree Checking of Exterior Paints
- ASTM D 2244-93 Test Method for Calculation of Color Difference from Instrumentally Measured Color Coordinates
- ASTM E 308-96 Standard Practice for Computing the Colors of Objects by Using the CIE System
- ASTM D1729-96 Practice for Visual Appraisal of Color and Color Difference of Diffusely-Illuminated Opaque Materials
- ASTM D 661-93 Method for Evaluating Degree of Cracking of Exterior Paints
- SFTS-1 (Wash)) 92-03-30 Method of Cleaning Exposed Specimens Prior to Inspection, Method A, Washed With Deionized Water and Soft Sponge
- ASTM D 523-89 (1999) Test Method for Specular Gloss
- ASTM D 4214-89 Standard Test Methods for Evaluating the Degree of Chalking of Exterior Paint Films, Method D, Transparent Tape Method

UV correlation testing has been performed using accelerated artificial weathering devices. Tests were performed using a QUV A Fluorescent Bulb Weatherometer. The test method utilizes a QUV machine, which consists of 2 banks of 4 fluorescent lights each that emit light in the UV-A (340 nm) wavelength. This UV wavelength simulates normal outdoor sunlight. The second part of the test utilizes water vapor to simulate rain/fog. The exposure cycle consist of alternating 4 hours of UV-A at 65 degree C and 4 hours of 100% relative humidity at 50 degree C. Testing is in accordance with ASTM G154 specifications.

Glossary

Glossary

Industry acronyms and enclosure terms

ANCE
National Standardization and Certification of the lectrical Sector Association Col. Fuentes de Tecamachalco Naucalpan de Juarez C.P. 53950, Edo. de Mexico. ANCE performs standards functions in Mexico which are similar to those of ANSI in the United States and CSA in Canada.

ANSI
American National Standards Institute, 1430 Broadway New York, NY 10018.

Arc Resistance
Measures electrical-breakdown conditions. Arc resistance is measured as time, in seconds that it takes for an electrical current to arc across a distance along the insulating surface. The higher the value, the greater the resistance to break down.

ASTM
American Society for Testing and Materials, 100 Barr Harbor Drive Conshohocken, PA 19428.

Attenuation
A measure of the ability to contain or repel EMI/RFI energy.

Bonding
Establishing a low impedance conducting path between conductors in an electrical system.

BTU
British Thermal Unit. A measure of the amount of heat required to raise the temperature of 1 lb. of water 1° F. This unit is commonly used to rate air conditioning capacity.

CANENA
Council for Harmonization of Electrotechnical Standardization of North America, harmonizes standards among Canada, Mexico and the United States.

Composite
The combination of reinforcing fibers, usually glass or carbon, and a polymer resin. The fiber reinforcement provides physical properties which exceed the resin alone.

Compression Set
A physical property of gasket materials, the difference between the initial height of a never compressed gasket and the same gasket after being compressed for a given time period divided by the original height and expressed as a percentage. A lower number is desirable.

Compressive Strength
Describes how much weight a non-moving, specified size and shape a material can withstand before crushed. Compressive strength is measured in thousands of pounds per square inch. Higher numbers indicate stronger materials.

Conduction
1. Electrical — The flow of electrical current in a material.
2. Thermal — The transfer of kinetic energy from one molecule to another as heat flows from a hot area to a cold area.

Continuity
A low impedance conducting path between conductors in an electrical system.

Convection
The transfer of heat by mixing fluids, either naturally or forced as by a fan or air conditioning.

Cover
The unhinged portion of an enclosure that closes an opening.

CSA
Canadian Standards Association 178 Rexdale Boulevard Etobicoke, Ontario Canada M9W 1R3.

dB (decibel)
Unit to express the effectiveness of a material or system in reducing electromagnetic interference. If an enclosure reduces the EMI by 30 dB, the power of the interfering wave will be reduced by a factor of 1000 in passing through the enclosure. The equation for calculating attenuation in decibels is dB = 10 log10 (P1/P2) where P1 = power of the interference wave before it passes through the enclosure, P2 = power of the wave after it has been reduced (attenuated) by the enclosure.

Deflection Temperature Under Load (DTUL)
Measure the temperature at which a material deflects a given amount under a given load. It was developed for thermoplastic materials which soften considerably when heated. It has a relatively little value as a design figure for reinforced thermosetting polymers.

Density
Is the weight of a materials per unit volume. It is measured in pounds per cubic foot (lbs./cu. Ft). Higher numbers indicate heavier materials.

Design Test
Tests to confirm performance of a product designed to an applicable standard, not intended to be a production test.

Dielectric Strength
Is an indication of the electrical strength of a material as an insulator. The specimen is placed between heavy cylindrical brass electrodes that carry electrical current. For short-term tests, the voltage is increased from zero to breakdown at a uniform rate. Breakdown by these tests means passage of sudden excessive current through the specimen; it can be verified by instruments and visible damage. The dielectric strength of an insulating material is the voltage gradient at which electric failure or breakdown occurs. The dielectric strengths of materials vary greatly with several conditions such as humidity and geometry. Is is not possible to apply the standard test values directly to field use unless all condition, including specimen dimension, are the same. Because of this, the dielectric-strength test results are of relative rather that absolute value as specification guides.

Door
The hinged portion of an enclosure that closes an opening.

Electromagnetic Emission
Electrical energy radiated into the environment intentionally by an antenna or incidentally by an electronic component or power equipment during a switching operation.

Electromagnetic Field
Invisible fields which surround energized conductors such as wires and antennas. A field has both electric and magnetic components.

Electromagnetic Immunity
The capability of an electronic component or electrical equipment to perform its intended function in the presence of external electromagnetic fields.

EMI

ElectroMagnetic Interference. Randomly radiated electrical energy which varies in frequency and intensity and is coupled to electronic systems with undesirable results. Sources include power lines, high voltage equipment, switches, relays or any device that generates an electric spark or corona.

EMC

ElectroMagnetic Compatibility. The ability of electronic equipment to perform its intended function in the presence of EMI and RFI disturbances without affecting proper operation.

EMP

ElectroMagnetic Pulse. Interference caused by a large and sudden electrical discharge such as lightning.

Enclosure

A surrounding case constructed to provide a degree of protection to personnel against incidental contact with the enclosed equipment and to provide a degree of protection to the enclosed equipment. Enclosure Type definitions describe the application and the environmental conditions for which an enclosure will provide protection.

EU

European Union

Flammability

94V-0 is a rating which is used to establish the flammability of enclosure materials. It is performed by exposing a specimen of the material in a vertical position to a flame and determining if it burns and for how long it continues to burn after the flame is removed.

Flexural Strength

Also known as bending strength. It describes how much of a non-moving weight can be applied before a materials yields or breaks. It is measured in thousands of pounds per square inch. Higher numbers mean the material is stronger and can withstand a heavier load.

Grounding

Intentionally establishing a low impedance current path between conducting materials at the same potential, not necessarily energized, of an electrical system and the earth at zero potential. Grounds are extremely critical to protect equipment and personnel from electrical shock.

Hazardous Area

Area where electrical equipment is installed and ignitable flammable gases and vapors; flammable and combustible liquids; combustible dusts or ignitable fibers and flyings are or could be present. See National Electrical Code, Articles 501-505 and 511-517.

Heat Deflection Temperature

The temperature at which a composite specimen begins to deflect when exposed to a prescribed load.

Heat Distortion Temperature

See Heat Deflection Temperature, both terms are used.

hz, hertz

The measure of frequency, defined as one cycle/sec.

IEC

International Electrotechnical Commission 1 Rue de Varembei CH-1211 Geneva 20, Switzerland.

Indoor Locations

Areas which are protected from exposure to the weather.

Impact Strength –IZOD

A measure of how much energy is absorbed by the material when it is broken by a moving weight. There area many different test methods for measuring impact. IZOD is but one of these methods. IZOD is measured in foot pounds per inch of width. (This is sometimes given as foot pounds per inch of notch.) Higher numbers mean that the materials will absorb more energy before it is broken by a moving weight.

K Factor

A measure of the effectiveness of a material as a thermal insulator. It represents the quantity of heat which can pass through one square foot of material in one hour for every degree Fahrenheit of temperature difference across one inch of material thickness.

Mhz, Megahertz

A measure of frequency, defined as one million cycles/sec.

Mold Shrinkage

Is the difference in dimensions between the cold mold and cold part.

NEC

National Electric Code, an NFPA document.

NEMA

National Electrical Manufacturers Association 1300 North 17th St, Suite 1847 Rosslyn, VA 22209.

NFPA

National Fire Protection Association 1 Batterymarch Park P.O. Box 9101 Quincy, MA 02269-9101.

Non-hazardous Areas

Area where electrical equipment is installed and ignitable flammable gases and vapors; flammable and combustible liquids; combustible dusts or ignitable fibers and flyings are not present. See NEC Articles 501-501 and 511-517 as well as the above definition of Hazardous Areas.

Non-ventilated

Constructed so as to provide no intentional circulation of external air through the enclosure.

Ohms per Square

A measurement unit for electrical continuity of the metal coating applied internally to fiberglass enclosures for EMI/RFI shielding. The surface resistance (conductivity) measurement is without units because the surface areas does not influence the reading, i.e., measurements will yield the same result over 1 in2, 1 cm2 or 1 m2.

Outdoor Locations

Areas which are exposed to the weather.

Relative Permittivity

Is the ration of the capacitance of a particular material to the capacitance of air. The relative permittivity of most insulating materials varies from 2 to 10, air having 1. Higher values indicate greater insulating qualities.

RFI

Radio Frequency Interference. Interference caused by radio waves which emanate from commercial radio and television stations, amateur radio broadcasts, radar, microwave ovens, etc. Radio waves are usually well defined in terms of amplitude and frequency.

Seamless Gasket

The polymer gasket which is automatically dispensed and chemically reacts to form a gasket which has no seams.

SMC

Sheet Molding Compound. The fiberglass-polyester material used to mold Stahlin Enclosures. The compression molding process used to make Stahlin fiberglass enclosures.

Specific Gravity

Is the ration of the density of a material to the density of water. It can be obtained by dividing a material's density in lbs/ft to the 3rd power by 62.36.

Specific Heat

(Thermal Capacity) Defines how much heat is needed to raise the temperature of one pound of material one degree F. It is measured in BTUs per pound per degree Fahrenheit (BTU/lb/~). Higher numbers mean that it takes more heat energy to raise the temperature of a material.

Strip Gasket

The neoprene material which is cut in strips and attached to the enclosure with an adhesive.

Temperature Rise

The temperature difference between air inside the enclosure and the ambient air outside the enclosure.

Tensile Elongation

When a specified size and shape bar of a material is pulled, it gets longer. Elongation tells how much longer it gets before it breaks.

Tensile Modulus

Measure of the ability of a material to withstand load without permanent deformation. It is normally measured as the slope of a the straight line portion of a plot of stress vs. strain. Is is measured in millions of pounds per square inch.

Tensile Strength

Describes how much of a non-moving load a material can withstand before it no longer returns to its original length upon removal of the load. Tensile strength is measured in thousands of pounds per square inch. Higher numbers indicate materials which can withstand a stronger pull before failure.

Thermal Coefficient of Expansion

Measures how much the length of a material will change when the material is heated or cooled. The value given is based on the inch as a unit. The number given shows how much this materials will increase in length if the temperature of the material is raised one degree Fahrenheit (in/in/˚F). Higher numbers mean that the material will expand or lengthen more for each degree rise in temperature. Smaller numbers indicate relative stability to change no matter what temperature.

Thermal Conductivity

Known as the K factor. It measures the transfer of heat from one side of a material to the other side. It is measured as BTUs per hour per unit area (square feet) for a thickness of one inch and a temperature difference of one degree Fahrenheit between both sides of the material in the same amount of time.

Thermal Radiation

The transfer of energy by electromagnetic waves.

Thermoplastic

A polymer which becomes solid when the temperature falls below its melting point. A thermoplastic polymer, once cured, can be reheated, melted and shaped into something else.

Thermoset

A polymer which is cured at a given temperature, an irreversible chemical reaction. A thermoset polymer, once cured, cannot be heated again and shaped into something else.

Torque

Torque is the tendency of a force to rotate an object about an axis. Just as a force is a push or pull, torque can be thought of as a twist. The unit of measure is generally expressed in foot pounds or inch pounds.

UL

Underwriters Laboratories, 333 Pfingsten Road, Northbrook, IL 60062.

ULC

Underwriters Laboratories of Canada, 7 Crouse Road, Scarborough, Ontario, Canada M1R 3A9.

UV

Ultraviolet Light. The component of sunlight above the visible spectrum that affects polymer materials in long term exposures.

Ventilated

Constructed so as to provide for the circulation of external air through the enclosure to remove excess heat, fumes, or vapors.

Volume Resistivity

Is the electrical resistance between opposite aces of a unit cube (1 cm to the 3rd power) of a given material. This resistance is expressed in ohms. Higher values indicate greater insulating qualities.

Water Absorption

A physical property of materials. A specimen of the material is weighed, placed in water for 24 hours and reweighed. The difference between the initial weight and the weight after water exposure is expressed as a percentage.

Part Number Index

Index

Catalog Part Numbers

Index

Index

Index

Notes

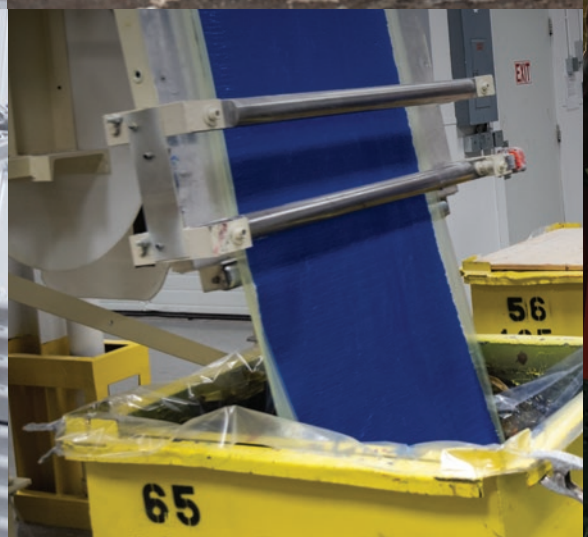
Notes

Notes

Notes

STAHLIN

A **ROBROY** ENCLOSURES® BRAND



STAHLIN

A **ROBROY** ENCLOSURES® BRAND

500 Maple Street
Belding, MI 48809

O: 616.794.0700
E: CSR@robroyenclosures.com

stahlin.com

MADE IN THE USA