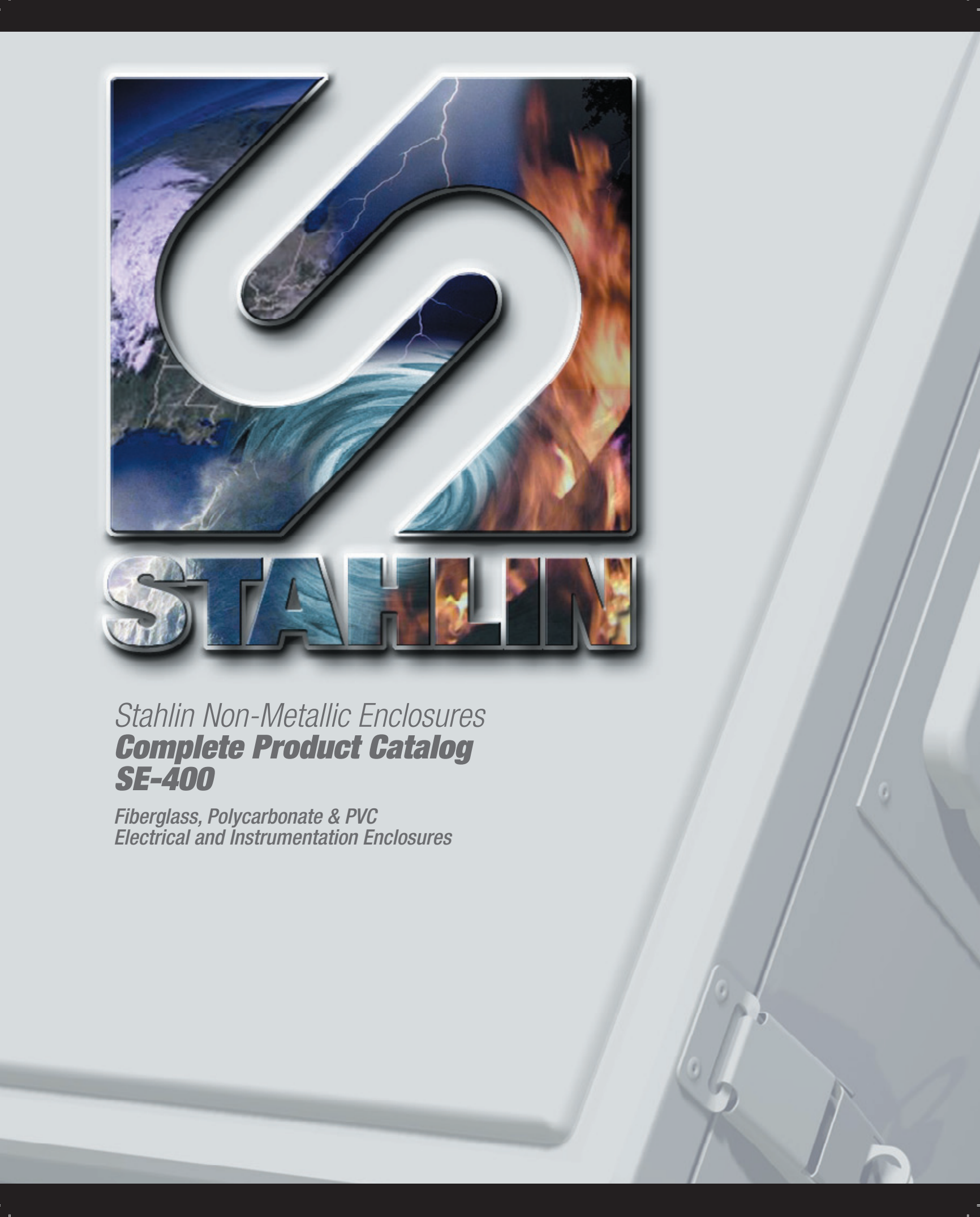

Stahlin Non-Metallic Enclosures

Complete Product Catalog
SE-400

Fiberglass, Polycarbonate & PVC
Electrical and Instrumentation Enclosures

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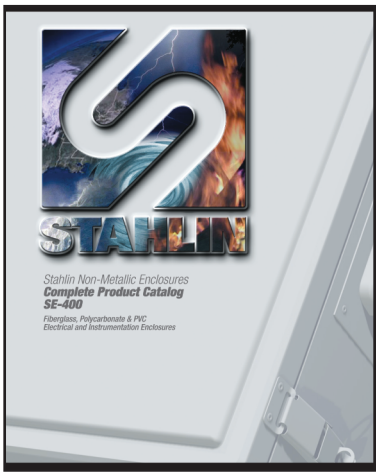
Introduction - Stahlin Product Catalog

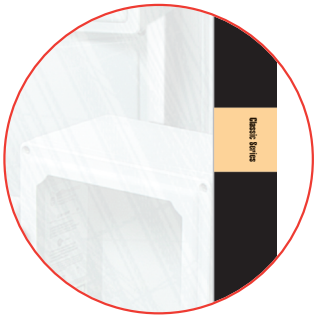
How To Use Our Catalog



Stahlin Product Catalog

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.

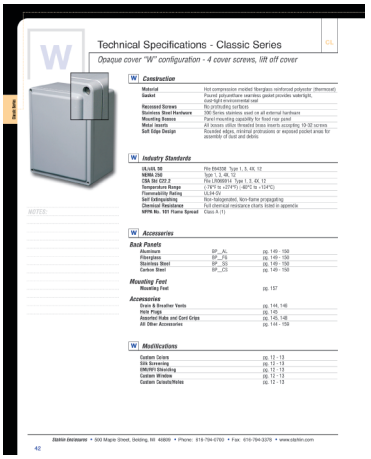
So it is with the original choice of enclosures. The choice represents the formation of a creative idea and assists in making it a reality. This catalog is about creative stimulation and the challenge to find your own unique solution.



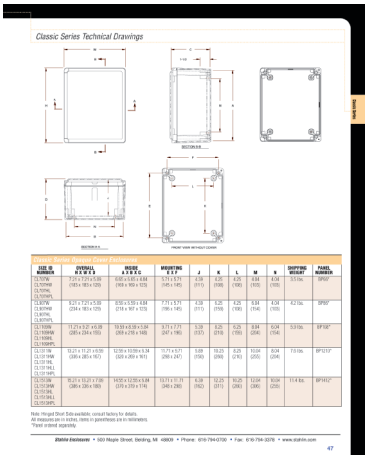
The pages have been arranged to assist you with ordering information and the development of proper part numbers. Colored tabs help to define key product areas and design concepts. They are provided as a means of quickly locating products found in the index and a reference to parts of the catalog to which you might often return. 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 product pages.

Classic Series intro 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 drawing.



Classic Series technical specifications



Classic Series technical drawings and chart

How To Use Our Website

www.Stahlin.com

Visit us online for up-to-date information and great customer service: Stahlin Enclosures website features all of our product information as well as offering a direct Customer Service channel to facilitate and direct your requests to maintaining a quick response.

In most cases, Stahlin Enclosures Customer Service team returns online request information in 24 hours!

Take our online tour in the "About Us" section

The "About Us" area of our website sections offer the links and information to learn more about our products and manufacturing facilities.

Directly download our latest Catalog and Price Guide

Keep your ordering records up-to-date with Stahlin product information at your fingertips.

CAD Files

All our enclosure product CAD files are available for download at your convenience.

Simply use our Search interface or Product area to guide yourself to the desired enclosure and choose CAD Download options to access our files.

Social Networks and News articles

Stahlin Enclosures home page immediately offers current company and product news introductions with options to click and learn more throughout our website. Join our social media and news resources by clicking on the icons featured on our web pages.

The Media Library

Stahlin.com offers complete access to ALL Stahlin's literature, including an online form allowing ordering of Stahlin Enclosures hard-copy, printed materials. Simply fill-out your online order form and we'll mail you the literature piece requested.

That's right! You can order this catalog and other literature pieces at **www.stahlin.com.**

Our online Customer Service and timely responsiveness is "top-notch"!

If you have any other product or industrial related questions please feel free to call us directly or visit our website: www.stahlin.com

General Information
Standards

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 required 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
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 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 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.

General Information

NA Standards continued and International Standards (IP Code)

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

A Brief Comparison Of NEMA – "Enclosure for Electrical Equipment (1000 Volts Maximum)" and IEC 60529 – "Degrees of Protection Provided By Enclosures (IP Code)"

This publication is intended to provide a brief comparison and explanation of some of the basic differences between NEMA Standard 250, Enclosures for Electrical Equipment (1000 Volts maximum) and 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?

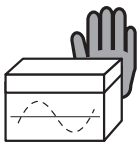
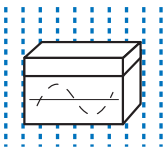
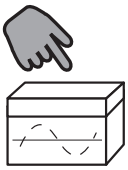
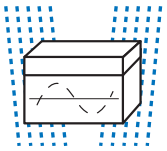
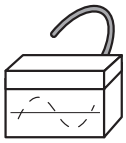
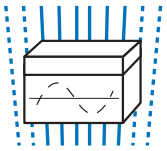
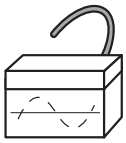
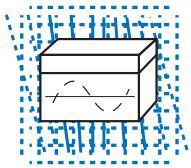
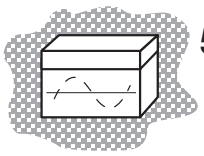
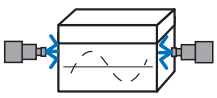
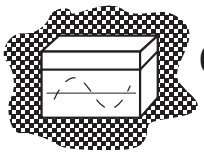
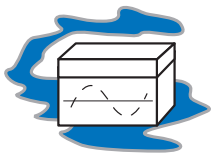
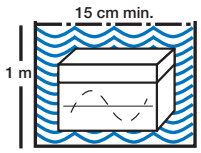
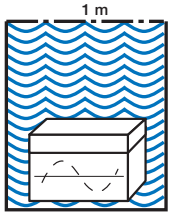
No! The IP Code only addresses requirements for protection of people, ingress of solid objects, and ingress of water. There are numerous other requirements covered by the Type designations that are not addressed by the IEC 60529/IP Codes. IEC 60529 does not specify:

- Construction requirements
- Door and cover securement
- Corrosion resistance
- Effects of icing
- Gasket aging and oil 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.

General Information - IP Code

Table 1.

First Number Protection against solid objects.		***Second Number*** Protection against liquids.	
	0 No Protection		0 No Protection
	1 Protected against solid objects up to 50 mm e.g. accidental touch by hands.		1 Protected against vertically falling drops of water.
	2 Protected against solid objects over 12 mm. e.g. fingers.		2 Protected against direct sprays of water up to 15° from the vertical.
	3 Protected against solid objects over 2.5 mm. e.g. fingers. (tools and small wires)		3 Protected against sprays to 60° from the vertical.
	4 Protected against solid objects over 1 mm. e.g. fingers. (tools and small wires)		4 Protected against water sprayed from all directions – limited ingress permitted.
	5 Protected against dust – limited ingress permitted (no harmful deposits.)		5 Protected against low pressure jets of water from all directions – limited ingress permitted.
	6 Totally protected against dust.		6 Protected against strong jets of water e.g. for us on ship decks – limited ingress permitted.
			7 Protected against the effects of immersion between 15 cm and 1 m.
			8 Protected against long periods of immersion under water.

General Information

IP Code continued

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

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.

General Information
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 below. 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:

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.

COMPARISON OF GROUPS	
NEC Group	**IEC Group**
A	IIC
B	IIC
C	IIB
D	IIA

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™ Enclosure Modification Capabilities

ModRight Services

Stahlin Enclosures prides itself in its willingness and ability to meet the enclosure modification needs of 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. They can take the form of:

- Custom mold-in colors
- Silk screening
- EMI/RFI shielding
- Custom window sizes
- Custom cutouts/holes
- Custom size enclosures
- Other special requests

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. When you need to pick up the phone for additional assistance, think Stahlin ModRight!

ModRight

The ModRight program is multi faceted and designed to meet a range of unique requirements from simple hole drilling to full custom blend of fiberglass material.

DesignRight

The DesignRight Program will take your custom concept, perhaps your embossed logo or a completely custom cover design, and conform it to an existing enclosure. The result is your custom cover on a "standard" base.

FormRight

The FormRight Program is available for custom material formulation to match your unique requirements. Stahlin will work with you to custom formulate the sheet molding compound with the attributes that you require for UV, flame retardation, infestation resistance, you name it.

ProRight

The ProRight Program offers the capability of prototyping a unique design through the hand layup process or low volume molding. Product can be pre-tested for its effectiveness before large volumes of product are produced.

BuildRight

The ModRight Program offers a complete range of standard and unique modifications that make a useful configuration right out of the carton available.

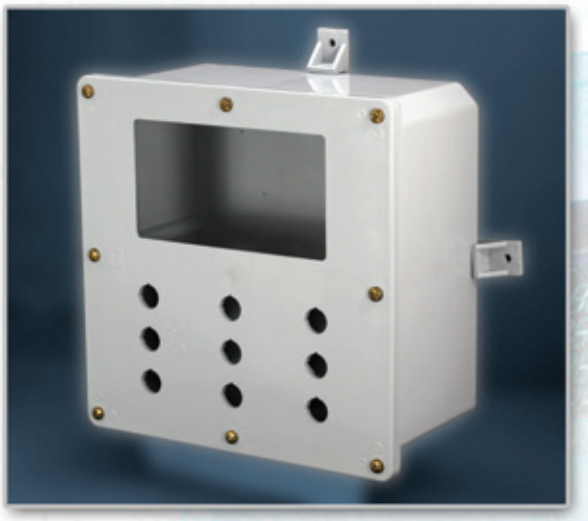
The BuildRight Program accommodates custom manufacturing and component assembly to deliver exactly the configuration that you desire at time of shipping.

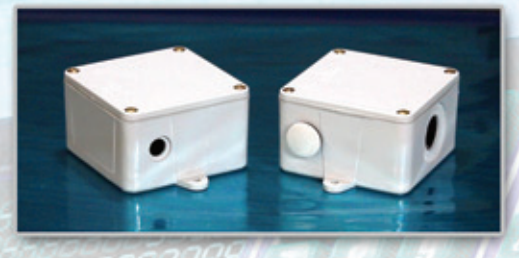
CostRight

The CostRight Program will help you determine beforehand how cost effective the pre-assembly can be. Prices are agreed to up front at an industry competitive rate.

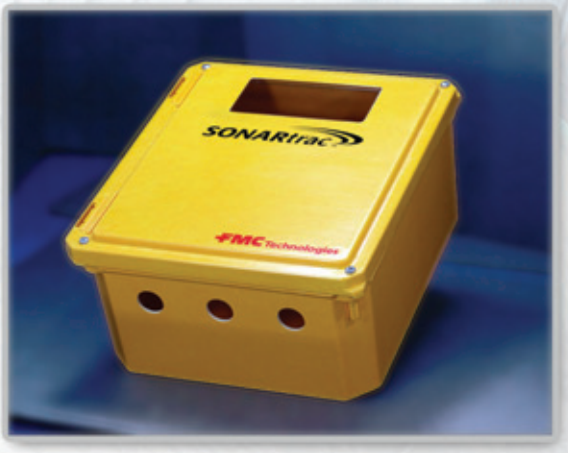
ShipRight

The ShipRight Program evaluates current shipping requirements and offers "when-needed" and on time deliveries in an agreed upon manner. Bulk shipping and quantity requirements are considered under this program.





This is the total package: from the basic product through all of its custom/modified required changes, to the moment it arrives at your doorstep for installation into your application, Stahlin ModRight Program offers standard and custom assistance for your every need. To receive a quotation or further information, please visit us at www.stahlin.com.



Stahlin's ModRight™ program can solve your custom needs.

The DiamondShield Series DS

The DiamondShield 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.

DiamondShield Series Attributes

- Available in 3 cover options:
  1. Opaque cover
  2. Clear polycarbonate cover
  3. Flush bonded window
- 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

DiamondShield Industry Standards

UL/cUL 50	File E64358 Type 1, 3, 3s, 4X, 12, 13
NEMA 250	Type 1, 3, 3s, 4X, 12, 13
CSA Std C22.2	File LR069014 Type 1, 3, 3s, 4X, 12, 13
IEC 60529	IP66
UL1741	File E333478 W, HW, HL, HPL
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
Cover Flammability	UL94-V0
Window Flammability	UL94-HB
Self Extinguishing	Non-Halogenated, Non-flame propagating
Chemical Resistance	Full chemical resistance charts listed in appendix
NFPA No. 101 Flame Spread	Class A (1)

W

Technical Specifications - DiamondShield Series

Opaque cover "W" configuration - 4 cover screws, lift off cover

NOTES:

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 10-32 screws
Soft Edge Design	Rounded edges, minimal protrusions or exposed pocket areas for assembly of dust and debris

W Industry Standards

UL/cUL 50	File E64358 Type 1, 3, 3s, 4X, 12, 13
NEMA 250	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
Self Extinguishing	Non-Halogenated, Non-flame propagating
Chemical Resistance	Full chemical resistance charts listed in appendix
NFPA No. 101 Flame Spread	Class A (1)

W Accessories

Back Panels

Aluminum	BP__AL	pg. 149 - 150
Fiberglass	BP__FG	pg. 149 - 150
Stainless Steel	BP__SS	pg. 149 - 150
Carbon Steel	BP__CS	pg. 149 - 150

Mounting Feet

Mounting Feet	pg. 39

Accessories

Drain & Breather Vents	pg. 144, 146
Hole Plugs	pg. 145
Assorted Hubs and Cord Grips	pg. 145, 148
All Other Accessories	pg. 144 - 159

W Modifications

Custom Colors	pg. 12 - 13
Silk Screening	pg. 12 - 13
EMI/RFI Shielding	pg. 12 - 13
Custom Window	pg. 12 - 13
Custom Cutouts/Holes	pg. 12 - 13

HW Technical Specifications - DiamondShield Series

Opaque cover "HW" configuration - Hinged, 2 cover screws

NOTES:

HW 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 10-32 screws
Soft Edge Design	Rounded edges, minimal protrusions or exposed pocket areas for assembly of dust and debris

HW Industry Standards

UL/cUL 50	File E64358 Type 1, 3, 3s, 4X, 12, 13
NEMA 250	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
Self Extinguishing	Non-Halogenated, Non-flame propagating
Chemical Resistance	Full chemical resistance charts listed in appendix
NFPA No. 101 Flame Spread	Class A (1)

HW Accessories

Back Panels

Aluminum	BP__AL	pg. 149 - 150
Fiberglass	BP__FG	pg. 149 - 150
Stainless Steel	BP__SS	pg. 149 - 150
Carbon Steel	BP__CS	pg. 149 - 150

Mounting Feet

Mounting Feet	pg. 39

Accessories

Drain & Breather Vents	pg. 144, 146
Hole Plugs	pg. 145
Assorted Hubs and Cord Grips	pg. 145, 148
All Other Accessories	pg. 144 - 159

HW Modifications

Custom Colors	pg. 12 - 13
Silk Screening	pg. 12 - 13
EMI/RFI Shielding	pg. 12 - 13
Custom Window	pg. 12 - 13
Custom Cutouts/Holes	pg. 12 - 13

HPL

Technical Specifications - DiamondShield Series

Opaque cover "HPL" configuration - Hinged, 2 lockable pull latches

NOTES:

HPL 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 10-32 screws
Soft Edge Design	Rounded edges, minimal protrusions or exposed pocket areas for assembly of dust and debris

HPL Industry Standards

UL/cUL 50	File E64358 Type 1, 3, 3s, 4X, 12, 13
NEMA 250	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
Self Extinguishing	Non-Halogenated, Non-flame propagating
Chemical Resistance	Full chemical resistance charts listed in appendix
NFPA No. 101 Flame Spread	Class A (1)

HPL Accessories

Back Panels

Aluminum	BP__AL	pg. 149 - 150
Fiberglass	BP__FG	pg. 149 - 150
Stainless Steel	BP__SS	pg. 149 - 150
Carbon Steel	BP__CS	pg. 149 - 150

Mounting Feet

Mounting Feet	pg. 39

Accessories

Drain & Breather Vents	pg. 144, 146
Hole Plugs	pg. 145
Assorted Hubs and Cord Grips	pg. 145, 148
All Other Accessories	pg. 144 - 159

HPL Modifications

Custom Colors	pg. 12 - 13
Silk Screening	pg. 12 - 13
EMI/RFI Shielding	pg. 12 - 13
Custom Window	pg. 12 - 13
Custom Cutouts/Holes	pg. 12 - 13

HLL

Technical Specifications - DiamondShield Series

Opaque cover "HLL" configuration - Hinged, 2 lockable link latches

NOTES:

HLL 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 10-32 screws
Soft Edge Design	Rounded edges, minimal protrusions or exposed pocket areas for assembly of dust and debris

HLL Industry Standards

UL/cUL 50	File E64358 Type 1, 3, 3s, 4X, 12, 13
NEMA 250	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
Self Extinguishing	Non-Halogenated, Non-flame propagating
Chemical Resistance	Full chemical resistance charts listed in appendix
NFPA No. 101 Flame Spread	Class A (1)

HLL Accessories

Back Panels

Aluminum	BP__AL	pg. 149 - 150
Fiberglass	BP__FG	pg. 149 - 150
Stainless Steel	BP__SS	pg. 149 - 150
Carbon Steel	BP__CS	pg. 149 - 150

Mounting Feet

Mounting Feet	pg. 39

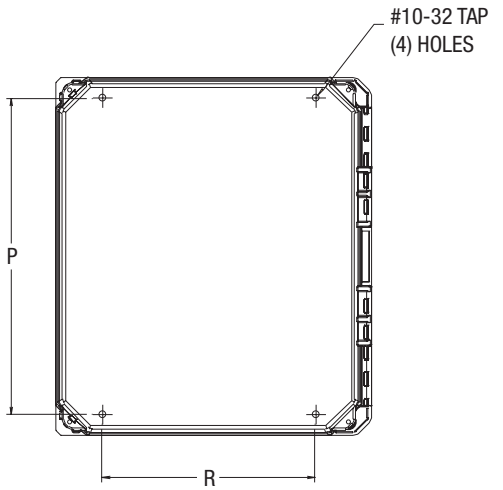
Accessories

Drain & Breather Vents	pg. 144, 146
Hole Plugs	pg. 145
Assorted Hubs and Cord Grips	pg. 145, 148
All Other Accessories	pg. 144 - 159

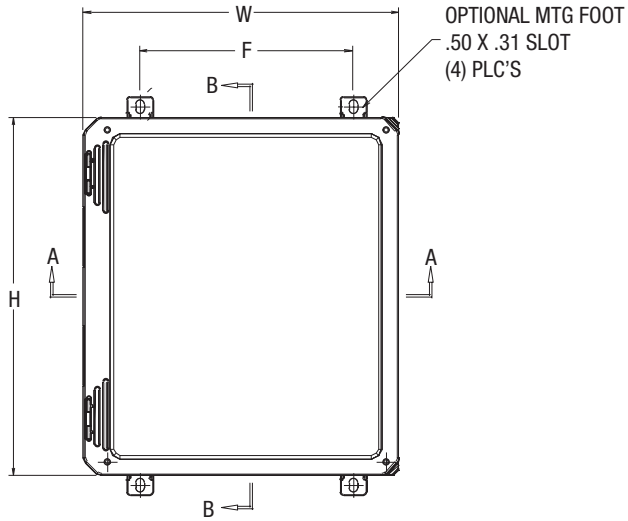
HLL Modifications

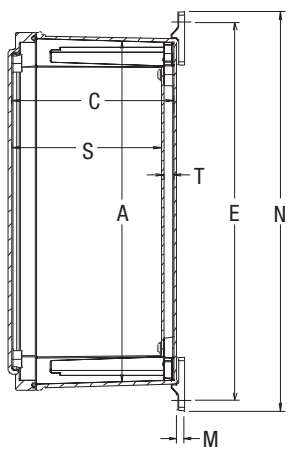
Custom Colors	pg. 12 - 13
Silk Screening	pg. 12 - 13
EMI/RFI Shielding	pg. 12 - 13
Custom Window	pg. 12 - 13
Custom Cutouts/Holes	pg. 12 - 13

DiamondShield Opaque Cover Series Technical Drawings

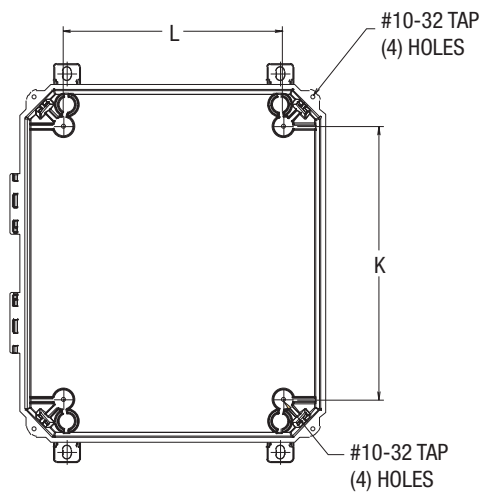


REAR VIEW

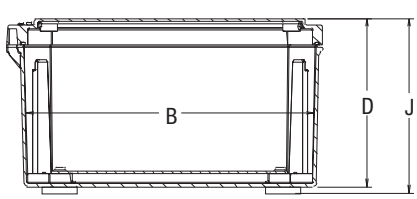




SECTION B-B



COVER
REMOVED



SECTION A-A

DiamondShield Opaque Cover Series Technical Chart

DiamondShield Opaque Cover Series Enclosures

SIZE ID 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	SHIPPING WEIGHT	PANEL NUMBER
DS60604W DS60604HW DS60604HPL DS60604HLL	7.41 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*
DS80604W DS80604HW DS80604HPL DS80604HLL	9.41 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*
DS80804W DS80804HW DS80804HPL DS80804HLL	9.39 x 9.76 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*
DS100806W DS100806HW DS100806HPL DS100806HLL	11.42 x 9.79 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	BP1008*
DS121006W DS121006HW DS121006HPL DS121006HLL	13.45 x 11.83 x 6.31 (342 x 301 x 160)	12.69 x 10.69 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*
DS141206W DS141206HW DS141206HPL DS141206HLL	15.44 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*
DS141208W DS141208HW DS141208HPL DS141208HLL	15.44 x 13.86 x 8.34 (392 x 352 x 212)	14.66 x 12.66 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*
DS161408W DS161408HW DS161408HPL DS161408HLL	17.58 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*
DS181610W DS181610HW DS181610HPL 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*
DS201610W DS201610HW DS201610HPL DS201610HLL	21.79 x 18.16 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.

Technical Specifications - DiamondShield Series

Clear cover "W" configuration - 4 cover screws, lift off cover

NOTES:

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 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

W Industry Standards

UL/cUL 50	File E64358 Type 1, 3, 3s, 12, 13, 4X
NEMA 250	Type 1, 3, 3s, 4X, 12, 13
CSA Std C22.2	File LR069014 Type 1, 3, 3s, 12, 13, 4X
IEC 60529	IP66
Temperature Range	(-76°F to +274°F) (-60°C to +134°C)
Flammability Rating	UL94-5V
Cover Temperature Range	(-30°F to +248°F) (-34°C to +120°C)
Cover Flammability	UL94-V0
Self Extinguishing	Non-halogenated, Non-flame propagating
Chemical Resistance	Full chemical resistance charts listed in appendix
NFPA No. 101 Flame Spread	Class A (1)

W Accessories

Back Panels

Aluminum	BP__AL	pg. 149 - 150
Fiberglass	BP__FG	pg. 149 - 150
Stainless Steel	BP__SS	pg. 149 - 150
Carbon Steel	BP__CS	pg. 149 - 150

Mounting Feet

Mounting Feet	pg. 39

Accessories

Drain & Breather Vents	pg. 144, 146
Hole Plugs	pg. 145
Assorted Hubs and Cord Grips	pg. 145, 148
All Other Accessories	pg. 144 - 159

W Modifications

Custom Colors	pg. 12 - 13
Silk Screening	pg. 12 - 13
EMI/RFI Shielding	pg. 12 - 13
Custom Window	pg. 12 - 13
Custom Cutouts/Holes	pg. 12 - 13

HW Technical Specifications - DiamondShield Series

Clear cover "HW" configuration - Hinged, 2 cover screws

NOTES:

HW 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 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

HW Industry Standards

UL/cUL 50	File E64358 Type 1, 3, 3s, 4X, 12, 13
NEMA 250	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	(-30°F to +248°F) (-34°C to +120°C)
Cover Flammability	UL94-V0
Self Extinguishing	Non-halogenated, Non-flame propagating
Chemical Resistance	Full chemical resistance charts listed in appendix
NFPA No. 101 Flame Spread	Class A (1)

HW Accessories

Back Panels

Aluminum	BP__AL	pg. 149 - 150
Fiberglass	BP__FG	pg. 149 - 150
Stainless Steel	BP__SS	pg. 149 - 150
Carbon Steel	BP__CS	pg. 149 - 150

Mounting Feet

Mounting Feet	pg. 39

Accessories

Drain & Breather Vents	pg. 144, 146
Hole Plugs	pg. 145
Assorted Hubs and Cord Grips	pg. 145, 148
All Other Accessories	pg. 144 - 159

HW Modifications

Custom Colors	pg. 12 - 13
Silk Screening	pg. 12 - 13
EMI/RFI Shielding	pg. 12 - 13
Custom Window	pg. 12 - 13
Custom Cutouts/Holes	pg. 12 - 13

HPL

Technical Specifications - DiamondShield Series

Clear cover "HPL" configuration - Hinged, 2 lockable pull latches

NOTES:

HPL 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 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

HPL Industry Standards

UL/cUL 50	File E64358 Type 1, 3, 3s, 4X, 12, 13
NEMA 250	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	(-30°F to +248°F) (-34°C to +120°C)
Cover Flammability	UL94-V0
Self Extinguishing	Non-halogenated, Non-flame propagating
Chemical Resistance	Full chemical resistance charts listed in appendix
NFPA No. 101 Flame Spread	Class A (1)

HPL Accessories

Back Panels

Aluminum	BP__AL	pg. 149 - 150
Fiberglass	BP__FG	pg. 149 - 150
Stainless Steel	BP__SS	pg. 149 - 150
Carbon Steel	BP__CS	pg. 149 - 150

Mounting Feet

Mounting Feet	pg. 39

Accessories

Drain & Breather Vents	pg. 144, 146
Hole Plugs	pg. 145
Assorted Hubs and Cord Grips	pg. 145, 148
All Other Accessories	pg. 144 - 159

HPL Modifications

Custom Colors	pg. 12 - 13
Silk Screening	pg. 12 - 13
EMI/RFI Shielding	pg. 12 - 13
Custom Window	pg. 12 - 13
Custom Cutouts/Holes	pg. 12 - 13

Technical Specifications - DiamondShield Series

Clear cover "HLL" configuration - Hinged, 2 lockable link latches

NOTES:

HLL 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 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

HLL Industry Standards

UL/cUL 50	File E64358 Type 1, 3, 3s, 4X, 12, 13
NEMA 250	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	(-30°F to +248°F) (-34°C to +120°C)
Cover Flammability	UL94-V0
Self Extinguishing	Non-halogenated, Non-flame propagating
Chemical Resistance	Full chemical resistance charts listed in appendix
NFPA No. 101 Flame Spread	Class A (1)

HLL Accessories

Back Panels

Aluminum	BP__AL	pg. 149 - 150
Fiberglass	BP__FG	pg. 149 - 150
Stainless Steel	BP__SS	pg. 149 - 150
Carbon Steel	BP__CS	pg. 149 - 150

Mounting Feet

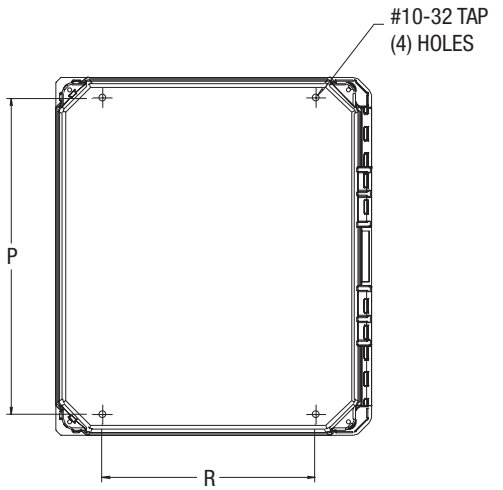
Mounting Feet	pg. 39

Accessories

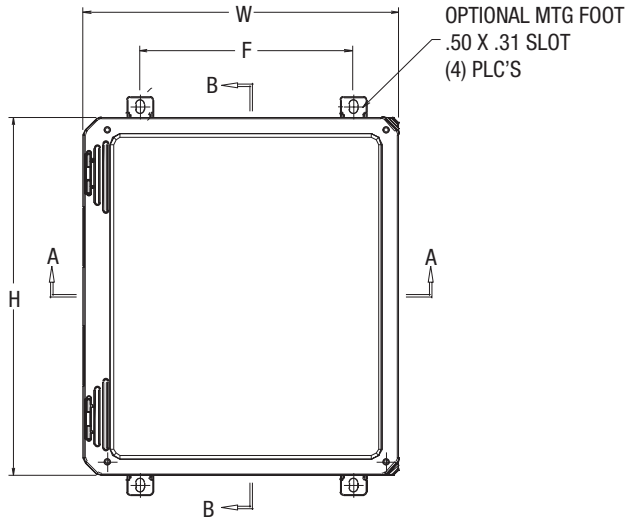
Drain & Breather Vents	pg. 144, 146
Hole Plugs	pg. 145
Assorted Hubs and Cord Grips	pg. 145, 148
All Other Accessories	pg. 144 - 159

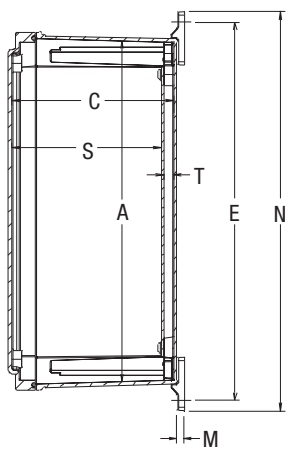
HLL Modifications

Custom Colors	pg. 12 - 13
Silk Screening	pg. 12 - 13
EMI/RFI Shielding	pg. 12 - 13
Custom Window	pg. 12 - 13
Custom Cutouts/Holes	pg. 12 - 13

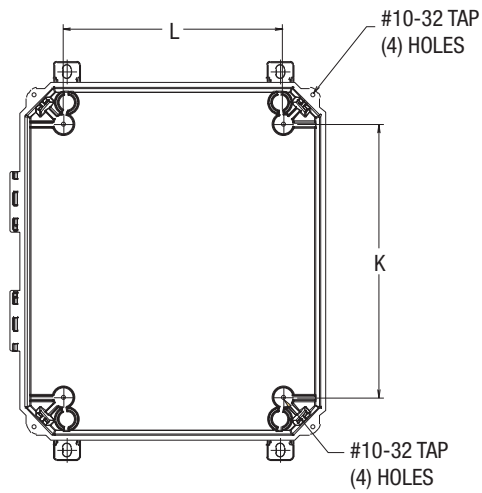


REAR VIEW





SECTION B-B



COVER
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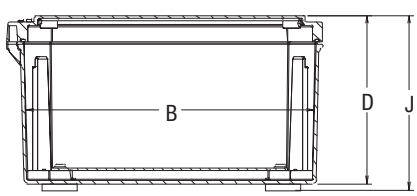


SECTION A-A

DiamondShield Clear Cover Series Technical Chart

DiamondShield Clear Cover Series Enclosures

SIZE ID 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	SHIPPING WEIGHT	PANEL NUMBER
DSCC60604W DSCC60604HW DSCC60604HPL DSCC60604HLL	7.41 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*
DSCC80604W DSCC80604HW DSCC80604HPL DSCC80604HLL	9.41 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*
DSCC80804W DSCC80804HW DSCC80804HPL DSCC80804HLL	9.39 x 9.76 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*
DSCC100806W DSCC100806HW DSCC100806HPL DSCC100806HLL	11.42 x 9.79 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	BP1008*
DSCC121006W DSCC121006HW DSCC121006HPL DSCC121006HLL	13.45 x 11.83 x 6.31 (342 x 301 x 160)	12.69 x 10.69 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*
DSCC141206W DSCC141206HW DSCC141206HPL 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*
DSCC141208W DSCC141208HW DSCC141208HPL DSCC141208HLL	15.49 x 13.86 x 8.34 (393 x 352 x 212)	14.66 x 12.66 x 8.06 (372 x 322 x 205)	13.88 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*
DSCC161408W DSCC161408HW DSCC161408HPL DSCC161408HLL	17.58 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.

HPL

Technical Specifications - DiamondShield Series

Flush Bonded Window "HPL" configuration - Hinged, 2 lockable pull latches

NOTES:

HPL 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 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

HPL Industry Standards

UL/cUL 50	File E64358 Type 1, 3, 3s, 4X, 12, 13
NEMA 250	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)
Window Flammability	UL94-HB
Self Extinguishing	Non-Halogenated, Non-flame propagating
Chemical Resistance	Full chemical resistance charts listed in appendix
NFPA No. 101 Flame Spread	Class A (1)

HPL Accessories

Back Panels

Aluminum	BP__AL	pg. 149 - 150
Fiberglass	BP__FG	pg. 149 - 150
Stainless Steel	BP__SS	pg. 149 - 150
Carbon Steel	BP__CS	pg. 149 - 150

Mounting Feet

Mounting Feet	pg. 39

Accessories

Drain & Breather Vents	pg. 144, 146
Hole Plugs	pg. 145
Assorted Hubs and Cord Grips	pg. 145, 148
All Other Accessories	pg. 144 - 159

HPL Modifications

Custom Colors	pg. 12 - 13
Silk Screening	pg. 12 - 13
EMI/RFI Shielding	pg. 12 - 13
Custom Window	pg. 12 - 13
Custom Cutouts/Holes	pg. 12 - 13

HLL

Technical Specifications - DiamondShield Series

Flush Bonded Window "HLL" configuration - Hinged, 2 lockable link latches

NOTES:

HLL 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 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

HLL Industry Standards

UL/cUL 50	File E64358 Type 1, 3, 3s, 4X, 12, 13
NEMA 250	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)
Window Flammability	UL94-HB
Self Extinguishing	Non-Halogenated, Non-flame propagating
Chemical Resistance	Full chemical resistance charts listed in appendix
NFPA No. 101 Flame Spread	Class A (1)

HLL Accessories

Back Panels

Aluminum	BP__AL	pg. 149 - 150
Fiberglass	BP__FG	pg. 149 - 150
Stainless Steel	BP__SS	pg. 149 - 150
Carbon Steel	BP__CS	pg. 149 - 150

Mounting Feet

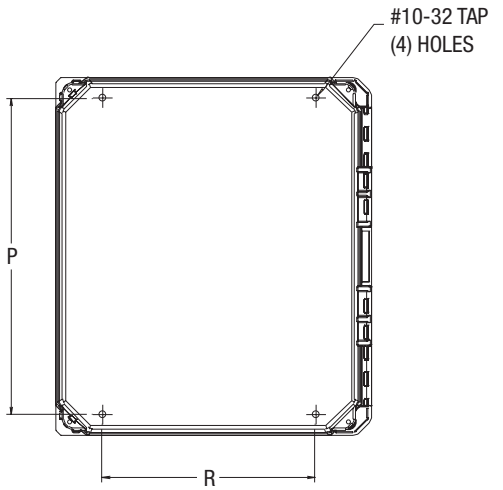
Mounting Feet	pg. 39

Accessories

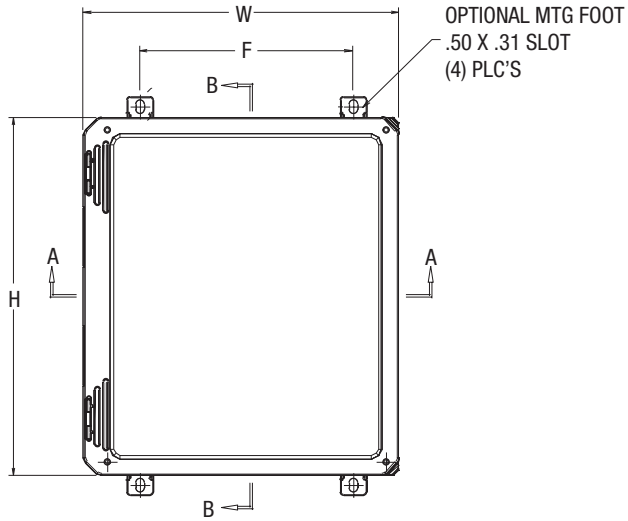
Drain & Breather Vents	pg. 144, 146
Hole Plugs	pg. 145
Assorted Hubs and Cord Grips	pg. 145, 148
All Other Accessories	pg. 144 - 159

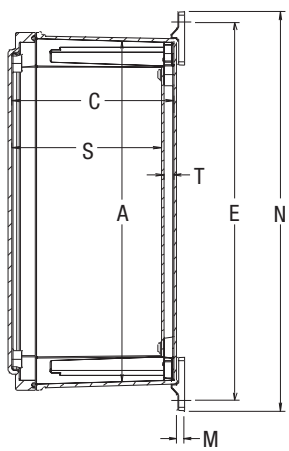
HLL Modifications

Custom Colors	pg. 12 - 13
Silk Screening	pg. 12 - 13
EMI/RFI Shielding	pg. 12 - 13
Custom Window	pg. 12 - 13
Custom Cutouts/Holes	pg. 12 - 13

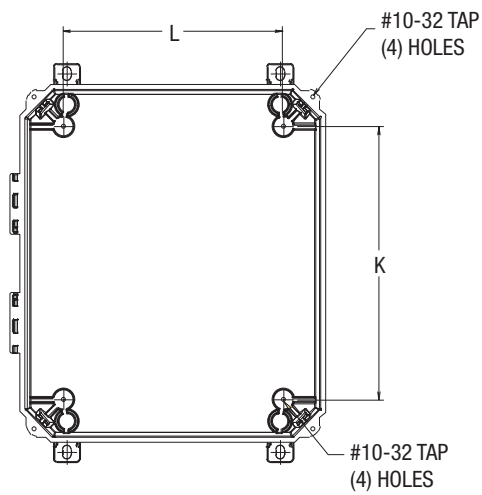


REAR VIEW





SECTION B-B



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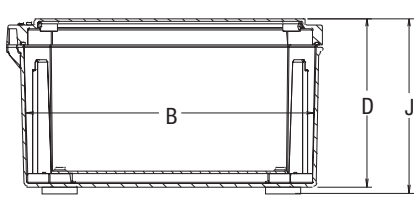


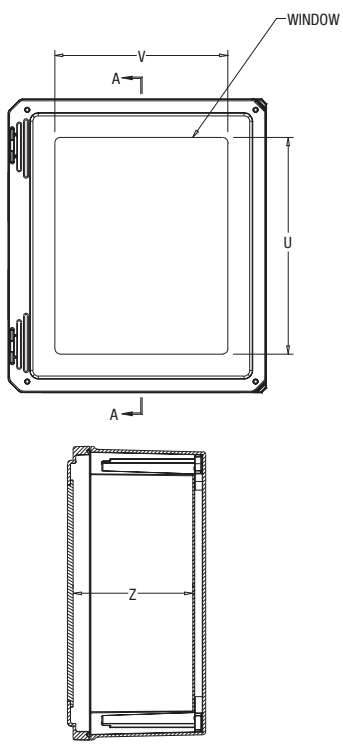
SECTION A-A

DiamondShield Window Series Technical Drawings

DiamondShield Window Series Enclosures

SIZE ID 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	SHIPPING WEIGHT	PANEL NUMBER
DSW60604HPL	7.41 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*
DSW80604HPL	9.41 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*
DSW80804HPL	9.39 x 9.76 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*
DSW100806HPL DSW100806HLL	11.42 x 9.79 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	BP1008*
DSW121006HPL	13.45 x 11.83 x 6.31 (342 x 301 x 160)	12.69 x 10.69 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*
DSW141206HPL	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*
DSW141208HPL	15.49 x 13.86 x 8.34 (393 x 352 x 212)	14.66 x 12.66 x 8.06 (372 x 322 x 205)	13.88 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*
DSW161408HPL DSW161408HLL	17.58 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*
DSW181610HPL DSW181610HLL	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*
DSW201610HPL DSW201610HLL	21.79 x 18.16 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



SECTION A-A

Viewing Window Cover (DSW)

SIZE ID NUMBER	U	V	Z
DSW60604	4.25 (107.95)	4.25 (107.95)	3.48 (88.26)
DSW80604	6.25 (158.75)	4.25 (107.95)	3.48 (88.26)
DSW80804	6.25 (158.75)	6.25 (158.75)	3.48 (88.26)
DSW100806	8.25 (209.55)	6.25 (158.75)	5.48 (139.19)
DSW121006	10.25 (260.35)	8.25 (209.55)	5.48 (139.19)
DSW141206	12.25 (311.15)	10.25 (260.35)	5.48 (139.19)
DSW141208	12.25 (311.15)	10.25 (260.35)	7.48 (189.99)
DSW161408	14.25 (361.95)	12.25 (311.15)	7.48 (189.99)
DSW181610	16.25 (412.75)	14.25 (361.95)	9.48 (240.79)
DSW201610	18.25 (463.55)	14.25 (361.95)	9.46 (240.28)

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

The Design Difference...
Unsurpassed Panel Management System®

Stahlin's innovative "No-Limits" Panel Management System® enables **DiamondShield** 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

The DiamondShield Panel Management System® Offers Many Benefits:

- Full utilization of both space and design. All space within the enclosure can be accessed and utilized with minimal requirements for additional mounting hardware.
- Panel maneuverability at both the time of assembly and in actual field use.
- 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 meet the needs for mounting surface at rear of enclosure.
- Ability to meet end users' design capabilities and field changes that would otherwise require major modification or costly disassembly.
- 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 touchpad layout. Maximizes end users' design possibilities.
- Ability to meet end users' requirements for the installation of isolated visibility or custom visual requirements.
- Offers restricted access to areas of adjustment and calibration.

Go From This!

To This!

DiamondShield 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

COVER PANEL

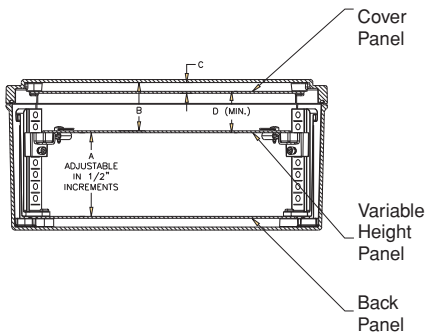
- Stationary panel that mounts to the inside of the enclosure cover.

USE MULTIPLE PANELS

Unique. Reliable. Flexible. Revolutionary. It's What You Want It To Be!

Just imagine ... an enclosure system that truly can be what you want...and need...it to be! Today, that enclosure system is a reality...with **DiamondShield**, from Stahlin Non-Metallic Enclosures.

The revolutionary design of **DiamondShield** provides a one-of-a-kind enclosure architecture that can range from "bare bones" basic yet durable simplicity to a highly customized, sophisticated protective structure.



DiamondShield Series Enclosures Panel Management System®

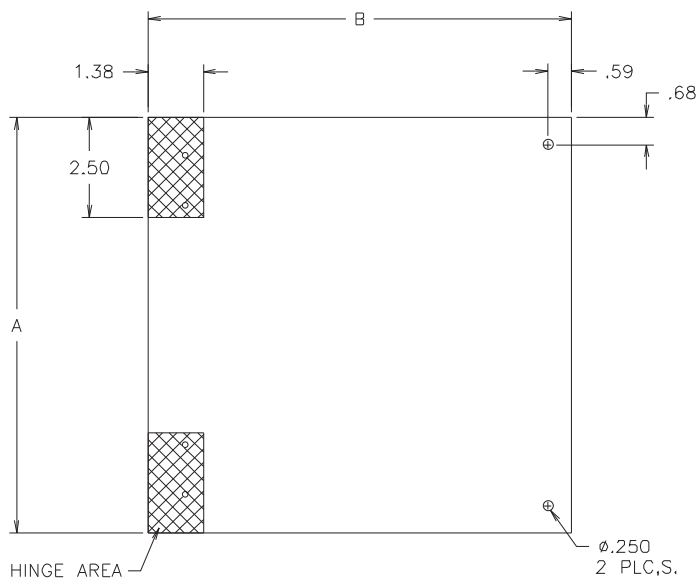
SIZE ID	FIXED PANEL (MIN) A	SWING PANEL (MIN) A	(MAX) A	OPAQUE/BONDED WINDOW CVR B	CLEAR CVR B	C	D (MIN)
60604	1.50 (38.1)	2.00 (50.08)	2.50 (63.50)	1.025 (26.03)	1.025 (26.03)	.375 (9.52)	.57 (14.48)
80604	1.50 (38.1)	2.00 (50.08)	2.50 (63.50)	1.025 (26.03)	1.025 (26.03)	.375 (9.52)	.57 (14.48)
80804	1.50 (38.1)	2.00 (50.08)	2.50 (63.50)	1.025 (26.03)	1.025 (26.03)	.375 (9.52)	.57 (14.48)
100806	1.50 (38.1)	2.00 (50.08)	4.50 (114.30)	1.025 (26.03)	1.025 (26.03)	.375 (9.52)	.57 (14.48)
121006	1.50 (38.1)	2.00 (50.08)	4.50 (114.30)	1.025 (26.03)	0.994 (25.24)	.375 (9.52)	.57 (14.48)
141206	1.50 (38.1)	2.00 (50.08)	4.50 (114.30)	1.025 (26.03)	0.963 (24.44)	.375 (9.52)	.57 (14.48)
141208	1.50 (38.1)	2.00 (50.08)	6.50 (165.1)	1.025 (26.03)	0.963 (24.44)	.375 (9.52)	.57 (14.48)
161408	1.50 (38.1)	2.00 (50.08)	6.50 (165.1)	1.025 (26.03)	0.963 (24.44)	.375 (9.52)	.57 (14.48)
181610	1.50 (38.1)	2.00 (50.08)	8.50 (215.90)	1.025 (26.03)	N/A	.375 (9.52)	.57 (14.48)
201610	1.50 (38.1)	2.00 (50.08)	8.50 (215.90)	1.025 (26.03)	N/A	.375 (9.52)	.57 (14.48)

Note: Swing and stationary panels adjust in 1/2" increments
"C" not applicable for clear cover
Cover panel kit not available for clear cover options

Variable Height Swing Panel

PART 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.

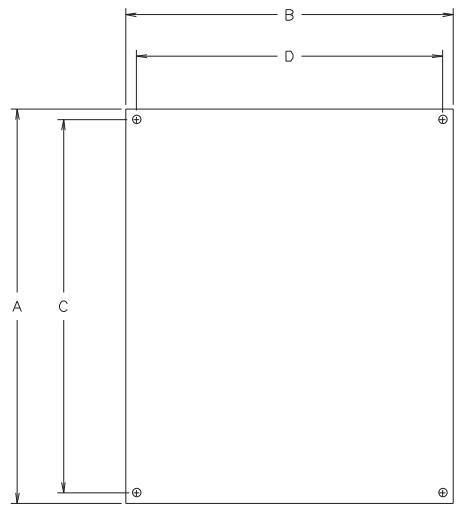


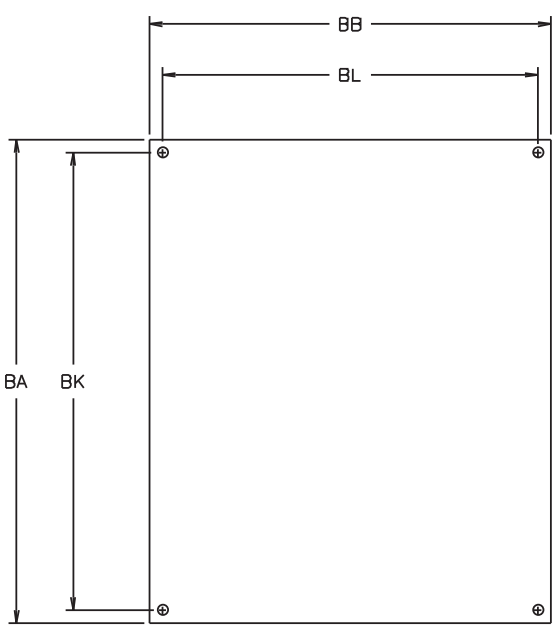
DiamondShield Panel Management System®

Cover Panel Dimensions

PART NUMBER	A	B	C	D	PANEL THK.	PANEL TYPE	HOLE DIA.	#OF HOLES
CP606AL	5.64 (143)	5.64 (143)	5.02 (127)	5.02 (127)	.080 (2)	Flat	.25 (6)	4
CP806AL	7.68 (195)	5.64 (143)	7.05 (179)	5.02 (127)	.080 (2)	Flat	.25 (6)	4
CP808AL	7.68 (195)	7.68 (195)	7.05 (179)	7.05 (179)	.080 (2)	Flat	.25 (6)	4
CP1008AL	9.71 (247)	7.71 (196)	9.08 (231)	7.08 (180)	.080 (2)	Flat	.25 (6)	4
CP1210AL	11.74 (298)	9.74 (247)	11.12 (282)	9.12 (232)	.080 (2)	Flat	.25 (6)	4
CP1412AL	13.78 (350)	11.78 (299)	13.15 (334)	11.15 (283)	.080 (2)	Flat	.25 (6)	4
CP1614AL	15.81 (402)	13.81 (351)	15.18 (386)	13.18 (334)	.080 (2)	Flat	.25 (6)	4
CP1816AL	17.94 (456)	15.94 (405)	17.31 (440)	15.31 (389)	.080 (2)	Flat	.25 (6)	4
CP2016AL	19.76 (502)	15.76 (400)	19.13 (486)	15.13 (384)	.080 (2)	Flat	.25 (6)	4

Caution: Metric units are for reference; do not convert.
Note: Cover panel kit includes cover panel and mounting hardware.





Back Panel Dimensions

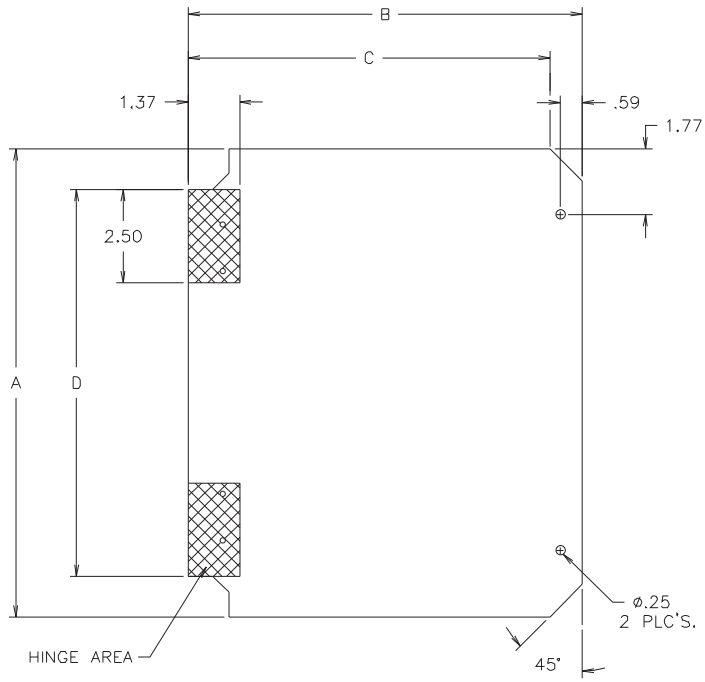
PART NUMBER	BA	BB	BK	BL	PANEL THK.	PANEL TYPE	HOLE DIA.	#OF HOLES
BP66	4.88 (124)	4.88 (124)	4.25 (108)	4.25 (108)	.080 (2)	Flat	.25 (6)	4
BP86	6.88 (175)	4.88 (124)	6.25 (159)	4.25 (108)	.080 (2)	Flat	.25 (6)	4
BP88	6.88 (175)	6.88 (175)	6.25 (159)	6.25 (159)	.080 (2)	Flat	.25 (6)	4
BP108	8.88 (225)	6.88 (175)	8.25 (210)	6.25 (159)	.080 (2)	Flat	.25 (6)	4
BP1210	10.88 (276)	8.88 (225)	10.25 (260)	8.25 (210)	.080 (2)	Flat	.25 (6)	4
BP1412	12.88 (327)	10.88 (276)	12.25 (311)	10.25 (260)	.080 (2)	Flat	.25 (6)	4
BP1614	14.88 (378)	12.88 (327)	14.25 (362)	12.25 (311)	.080 (2)	Flat	.25 (6)	4
BP1816	16.88 (429)	14.88 (378)	16.25 (413)	14.25 (362)	.080 (2)	Flat	.25 (6)	4
BPJ2016	18.88 (480)	14.88 (378)	18.25 (464)	14.25 (362)	.090 (2)	Flat	.25 (6)	4

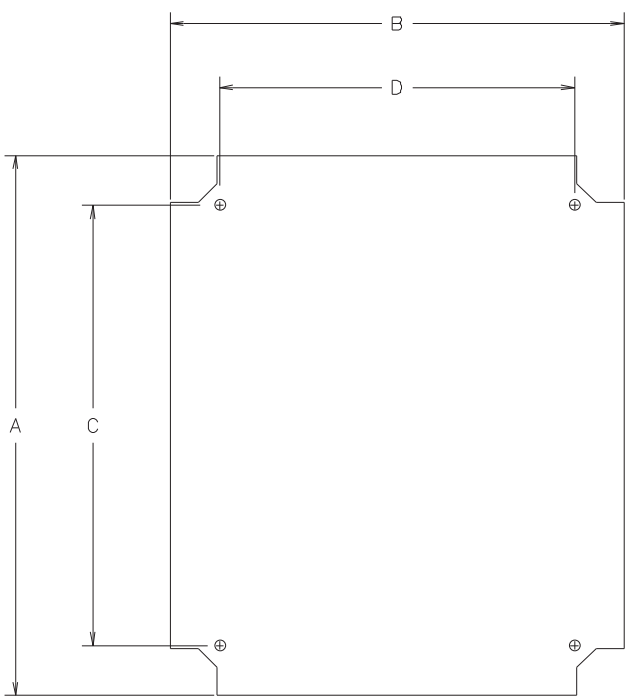
Caution: Metric units are for reference; do not convert.
Suffix - Available materials
AL - Aluminum
CS - Painted Carbon Steel
SS - Stainless Steel
Example: BP1210AL

Dead Front Swing Panel Dimensions

PART NUMBER	A	B	C	D	PANEL THK.	PANEL TYPE
P806SWAL	8.56 (217)	6.56 (167)	5.70 (145)	6.37 (162)	.080 (2)	Flat
P808SWAL	8.56 (217)	8.56 (217)	7.70 (196)	6.37 (162)	.080 (2)	Flat
P1008SWAL	10.56 (268)	8.56 (217)	7.70 (196)	8.37 (213)	.080 (2)	Flat
P1210SWAL	12.56 (319)	10.56 (268)	10.37 (246)	9.70 (263)	.080 (2)	Flat
P1412SWAL	14.56 (370)	12.56 (319)	11.70 (297)	12.37 (314)	.080 (2)	Flat
P1614SWAL	16.56 (421)	14.56 (370)	15.57 (399)	14.37 (365)	.080 (2)	Flat
P1816SWAL	18.56 (471)	16.56 (421)	15.70 (399)	16.37 (467)	.080 (2)	Flat
P2016SWAL	20.56 (522)	16.56 (421)	15.70 (399)	18.37 (467)	.080 (2)	Flat

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





Variable Height Stationary Panel Dimensions

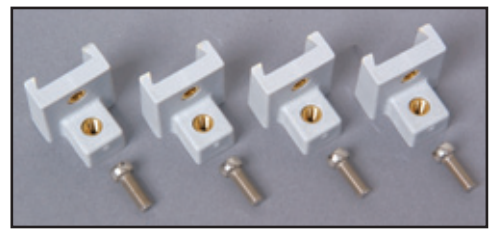
PART NUMBER	A	B	C	D	PANEL THK.	PANEL TYPE	HOLE DIA.	#OF HOLES
P606STAL	6.56 (167)	6.56 (167)	4.25 (108)	4.25 (108)	.080 (2)	Flat	.25 (6)	4
P806STAL	8.56 (217)	6.56 (167)	6.25 (159)	4.25 (108)	.080 (2)	Flat	.25 (6)	4
P808STAL	8.56 (217)	8.56 (217)	6.25 (159)	6.25 (159)	.080 (2)	Flat	.25 (6)	4
P1008STAL	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.

DiamondShield Panel Management System®

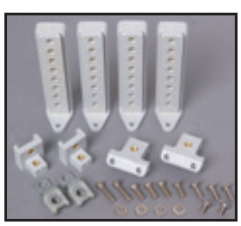
Panel Kits - Accessories Only, Panels NOT Included

SIZE ID	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



Stationary Panel Bracket Kit

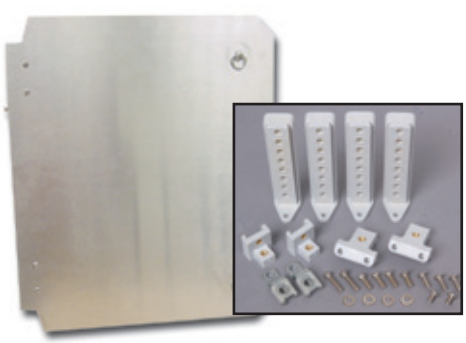
Stationary Panel Accessory Kit



Swing Panel Accessory Kit

Swing Panel Bracket Kit

Corner Post Kit

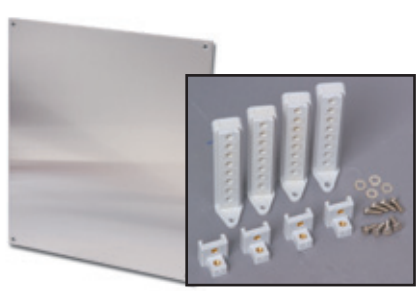


Dead Front Swing Panel & Swing Panel Accessory Kit

Panel And Accessory Combination Kits, Includes Panel

SIZE ID	DEAD FRONT SWING PANEL & ACCESS. KIT	VARIABLE HEIGHT SWING PANEL & ACCESS. KIT	VARIABLE HEIGHT STATIONARY PNL & ACCESS. KIT	VARIABLE HEIGHT BACK PNL & ACCESS. 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

Variable Height Swing Panel & Swing Panel Accessory Kit

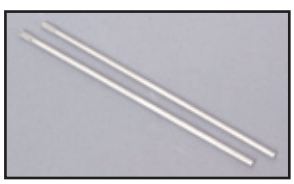


Variable Height Back Panel & Stationary Panel Accessory Kit

Variable Height Stationary Panel & Stationary Panel Accessory Kit

Mounting Feet

Cover
Screw Kit



Hinge Kit

Other Accessory Kits

SIZE ID	MTG. FOOT KIT	OPAQUE COVER SCREW KIT	CLEAR COVER SCREW KIT	LINK LOCK 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

Lockable Link Latch Kit

Lockable Pull Latch Kit

DiamondShield Covers Only

Opaque Covers	Clear Covers	Viewing Window Covers
PART NUMBER	PART NUMBER	PART NUMBER
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

The Classic Series CL

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.

Classic Series 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

Classic Series Industry Standards

UL/cUL 50	File E64358 Type 1, 3R, 4X, 12
NEMA 250	Type 1, 3, 4X, 12
CSA Std C22.2	File LR069014 Type 1, 3, 4X, 12
UL1741	File E333478 Type 1, 3, 4X, 12 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
Window Flammability	UL94-HB
Self Extinguishing	Non-halogenated, Non-flame propagating
Chemical Resistance	Full chemical resistance charts listed in appendix
NFPA No. 101 Flame Spread	Class A (1)

W

Technical Specifications - Classic Series

Opaque cover "W" configuration - 4 cover screws, lift off cover

NOTES:

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 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

W Industry Standards

UL/cUL 50	File E64358 Type 1, 3, 4X, 12
NEMA 250	Type 1, 3, 4X, 12
CSA Std C22.2	File LR069014 Type 1, 3, 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)

W Accessories

Back Panels

Aluminum	BP__AL	pg. 149 - 150
Fiberglass	BP__FG	pg. 149 - 150
Stainless Steel	BP__SS	pg. 149 - 150
Carbon Steel	BP__CS	pg. 149 - 150

Mounting Feet

Mounting Feet	pg. 157

Accessories

Drain & Breather Vents	pg. 144, 146
Hole Plugs	pg. 145
Assorted Hubs and Cord Grips	pg. 145, 148
All Other Accessories	pg. 144 - 159

W Modifications

Custom Colors	pg. 12 - 13
Silk Screening	pg. 12 - 13
EMI/RFI Shielding	pg. 12 - 13
Custom Window	pg. 12 - 13
Custom Cutouts/Holes	pg. 12 - 13

HW Technical Specifications - Classic Series

Opaque cover "HW" configuration - Hinged, 2 cover screws

NOTES:

HW 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 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

HW Industry Standards

UL/cUL 50	File E64358 Type 1, 3, 4X, 12
NEMA 250	Type 1, 3, 4X, 12
CSA Std C22.2	File LR069014 Type 1, 3, 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)

HW Accessories

Back Panels

Aluminum	BP__AL	pg. 149 - 150
Fiberglass	BP__FG	pg. 149 - 150
Stainless Steel	BP__SS	pg. 149 - 150
Carbon Steel	BP__CS	pg. 149 - 150

Mounting Feet

Mounting Feet	pg. 157

Accessories

Drain & Breather Vents	pg. 144, 146
Hole Plugs	pg. 145
Assorted Hubs and Cord Grips	pg. 145, 148
All Other Accessories	pg. 144 - 159

HW Modifications

Custom Colors	pg. 12 - 13
Silk Screening	pg. 12 - 13
EMI/RFI Shielding	pg. 12 - 13
Custom Window	pg. 12 - 13
Custom Cutouts/Holes	pg. 12 - 13

HL

Technical Specifications - Classic Series

Opaque cover "HL" configuration - Hinged, through-the-door latch

NOTES:

HL 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 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

HL Industry Standards

UL/cUL 50	File E64358 Type 1, 3, 4X, 12
NEMA 250	Type 1, 3, 4X, 12
CSA Std C22.2	File LR069014 Type 1, 3, 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)

HL Accessories

Back Panels

Aluminum	BP__AL	pg. 149 - 150
Fiberglass	BP__FG	pg. 149 - 150
Stainless Steel	BP__SS	pg. 149 - 150
Carbon Steel	BP__CS	pg. 149 - 150

Mounting Feet

Mounting Feet	pg. 157

Accessories

Drain & Breather Vents	pg. 144, 146
Hole Plugs	pg. 145
Assorted Hubs and Cord Grips	pg. 145, 148
All Other Accessories	pg. 144 - 159

HL Modifications

Custom Colors	pg. 12 - 13
Silk Screening	pg. 12 - 13
EMI/RFI Shielding	pg. 12 - 13
Custom Window	pg. 12 - 13
Custom Cutouts/Holes	pg. 12 - 13

HLL Technical Specifications - Classic Series

Opaque cover "HLL" configuration - Hinged, twist latch

NOTES:

HLL 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 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

HLL Industry Standards

UL/cUL 50	File E64358 Type 1, 3, 4X, 12
NEMA 250	Type 1, 3, 4X, 12
CSA Std C22.2	File LR069014 Type 1, 3, 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)

HLL Accessories

Back Panels

Aluminum	BP__AL	pg. 149 - 150
Fiberglass	BP__FG	pg. 149 - 150
Stainless Steel	BP__SS	pg. 149 - 150
Carbon Steel	BP__CS	pg. 149 - 150

Mounting Feet

Mounting Feet	pg. 157

Accessories

Drain & Breather Vents	pg. 144, 146
Hole Plugs	pg. 145
Assorted Hubs and Cord Grips	pg. 145, 148
All Other Accessories	pg. 144 - 159

HLL Modifications

Custom Colors	pg. 12 - 13
Silk Screening	pg. 12 - 13
EMI/RFI Shielding	pg. 12 - 13
Custom Window	pg. 12 - 13
Custom Cutouts/Holes	pg. 12 - 13

HPL Technical Specifications - Classic Series

Opaque cover "HPL" configuration - Hinged, padlock latch

NOTES:

HPL 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 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

HPL Industry Standards

UL/cUL 50	File E64358 Type 1, 3, 4X, 12
NEMA 250	Type 1, 3, 4X, 12
CSA Std C22.2	File LR069014 Type 1, 3, 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)

HPL Accessories

Back Panels

Aluminum	BP__AL	pg. 149 - 150
Fiberglass	BP__FG	pg. 149 - 150
Stainless Steel	BP__SS	pg. 149 - 150
Carbon Steel	BP__CS	pg. 149 - 150

Mounting Feet

Mounting Feet	pg. 157

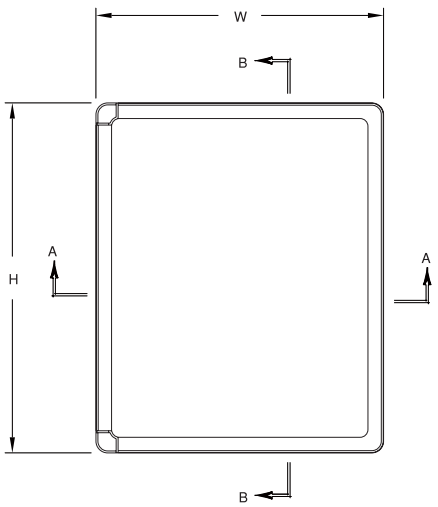
Accessories

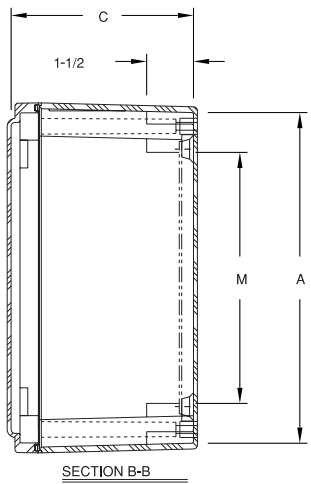
Drain & Breather Vents	pg. 144, 146
Hole Plugs	pg. 145
Assorted Hubs and Cord Grips	pg. 145, 148
All Other Accessories	pg. 144 - 159

HPL Modifications

Custom Colors	pg. 12 - 13
Silk Screening	pg. 12 - 13
EMI/RFI Shielding	pg. 12 - 13
Custom Window	pg. 12 - 13
Custom Cutouts/Holes	pg. 12 - 13

Classic Series Technical Drawings





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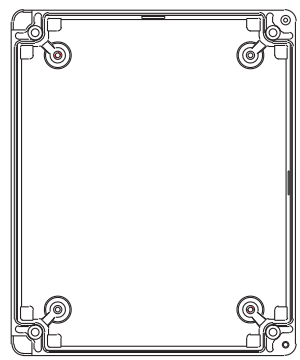

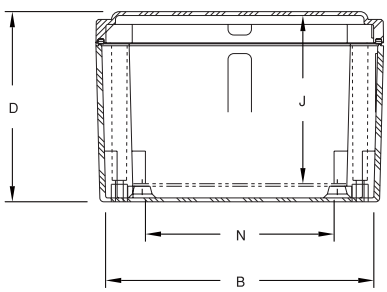

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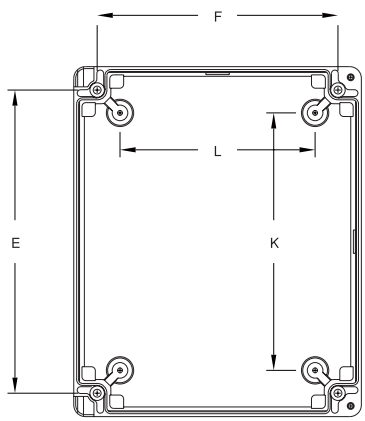


FRONT VIEW WITHOUT COVER

Classic Series Opaque Cover Enclosures

SIZE ID NUMBER	OVERALL H X W X D	INSIDE A X B X C	MOUNTING E X F	J	K	L	M	N	SHIPPING WEIGHT	PANEL NUMBER
CL707W CL707HW CL707HL CL707HPL	7.21 x 7.21 x 5.09 (183 x 183 x 129)	6.65 x 6.65 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)	3.5 lbs.	BP66*
CL907W CL907HW CL907HL CL907HPL	9.21 x 7.21 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)	4.2 lbs.	BP86*
CL1109W CL1109HW CL1109HL CL1109HPL	11.21 x 9.21 x 6.09 (285 x 234 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)	5.9 lbs.	BP108*
CL1311W CL1311HW CL1311HL CL1311HLL CL1311HPL	13.21 x 11.21 x 6.59 (336 x 285 x 167)	12.59 x 10.59 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)	7.6 lbs.	BP1210*
CL1513W CL1513HW CL1513HL CL1513HLL CL1513HPL	15.21 x 13.21 x 7.09 (386 x 336 x 180)	14.55 x 12.55 x 6.84 (370 x 319 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)	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 ordered separately.

Technical Specifications - Classic Window Series

CLW

Flush Bonded Window "W" configuration - 4 cover screws, lift off cover

NOTES:

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 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

W Industry Standards

UL/cUL 50	File E64358 Type 1, 3, 4X, 12
NEMA 250	Type 1, 3, 4X, 12
CSA Std C22.2	File LR069014 Type 1, 3, 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)
Window Flammability Rating	UL94-HB
Self Extinguishing	Non-halogenated, Non-flame propagating
Chemical Resistance	Full chemical resistance charts listed in appendix
NFPA No. 101 Flame Spread	Class A (1)

W Accessories

Back Panels

Aluminum	BP__AL	pg. 149 - 150
Fiberglass	BP__FG	pg. 149 - 150
Stainless Steel	BP__SS	pg. 149 - 150
Carbon Steel	BP__CS	pg. 149 - 150

Mounting Feet

Mounting Feet	pg. 157

Accessories

Drain & Breather Vents	pg. 144, 146
Hole Plugs	pg. 145
Assorted Hubs and Cord Grips	pg. 145, 148
All Other Accessories	pg. 144 - 159

W Modifications

Custom Colors	pg. 12 - 13
Silk Screening	pg. 12 - 13
EMI/RFI Shielding	pg. 12 - 13
Custom Window	pg. 12 - 13
Custom Cutouts/Holes	pg. 12 - 13

HW Technical Specifications - Classic Window Series

CLW

Flush Bonded Window "HW" configuration - Hinged, 2 cover screws

NOTES:

HW 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 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

HW Industry Standards

UL/cUL 50	File E64358 Type 1, 3, 4X, 12
NEMA 250	Type 1, 3, 4X, 12
CSA Std C22.2	File LR069014 Type 1, 3, 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)
Window Flammability Rating	UL94-HB
Self Extinguishing	Non-halogenated, Non-flame propagating
Chemical Resistance	Full chemical resistance charts listed in appendix
NFPA No. 101 Flame Spread	Class A (1)

HW Accessories

Back Panels

Aluminum	BP__AL	pg. 149 - 150
Fiberglass	BP__FG	pg. 149 - 150
Stainless Steel	BP__SS	pg. 149 - 150
Carbon Steel	BP__CS	pg. 149 - 150

Mounting Feet

Mounting Feet	pg. 157

Accessories

Drain & Breather Vents	pg. 144, 146
Hole Plugs	pg. 145
Assorted Hubs and Cord Grips	pg. 145, 148
All Other Accessories	pg. 144 - 159

HW Modifications

Custom Colors	pg. 12 - 13
Silk Screening	pg. 12 - 13
EMI/RFI Shielding	pg. 12 - 13
Custom Window	pg. 12 - 13
Custom Cutouts/Holes	pg. 12 - 13

HLL

Technical Specifications - Classic Window Series

Flush Bonded Window "HLL" configuration - Hinged, twist latch

NOTES:

HLL 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 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

HLL Industry Standards

UL/cUL 50	File E64358 Type 1, 3, 4X, 12
NEMA 250	Type 1, 3, 4X, 12
CSA Std C22.2	File LR069014 Type 1, 3, 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)
Window Flammability Rating	UL94-HB
Self Extinguishing	Non-halogenated, Non-flame propagating
Chemical Resistance	Full chemical resistance charts listed in appendix
NFPA No. 101 Flame Spread	Class A (1)

HLL Accessories

Back Panels

Aluminum	BP__AL	pg. 149 - 150
Fiberglass	BP__FG	pg. 149 - 150
Stainless Steel	BP__SS	pg. 149 - 150
Carbon Steel	BP__CS	pg. 149 - 150

Mounting Feet

Mounting Feet	pg. 157

Accessories

Drain & Breather Vents	pg. 144, 146
Hole Plugs	pg. 145
Assorted Hubs and Cord Grips	pg. 145, 148
All Other Accessories	pg. 144 - 159

HLL Modifications

Custom Colors	pg. 12 - 13
Silk Screening	pg. 12 - 13
EMI/RFI Shielding	pg. 12 - 13
Custom Window	pg. 12 - 13
Custom Cutouts/Holes	pg. 12 - 13

HPL Technical Specifications - Classic Window Series

"HPL" configuration - Hinged, padlock latch

NOTES:

HPL 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 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

HPL Industry Standards

UL/cUL 50	File E64358 Type 1, 3, 4X, 12
NEMA 250	Type 1, 3, 4X, 12
CSA Std C22.2	File LR069014 Type 1, 3, 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)
Window Flammability Rating	UL94-HB
Self Extinguishing	Non-halogenated, Non-flame propagating
Chemical Resistance	Full chemical resistance charts listed in appendix
NFPA No. 101 Flame Spread	Class A (1)

HPL Accessories

Back Panels

Aluminum	BP__AL	pg. 149 - 150
Fiberglass	BP__FG	pg. 149 - 150
Stainless Steel	BP__SS	pg. 149 - 150
Carbon Steel	BP__CS	pg. 149 - 150

Mounting Feet

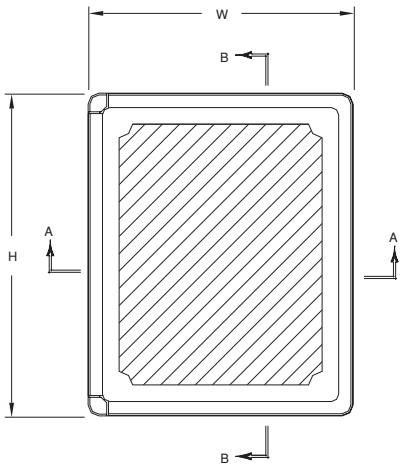
Mounting Feet	pg. 157

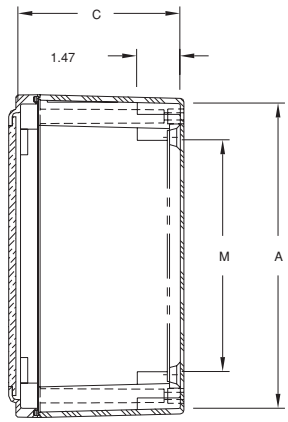
Accessories

Drain & Breather Vents	pg. 144, 146
Hole Plugs	pg. 145
Assorted Hubs and Cord Grips	pg. 145, 148
All Other Accessories	pg. 144 - 159

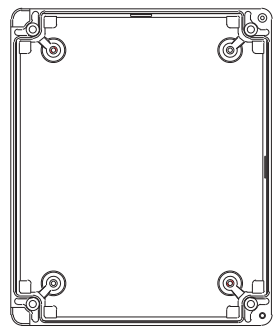
HPL Modifications

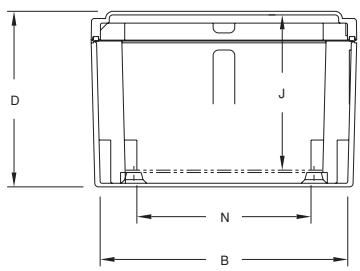
Custom Colors	pg. 12 - 13
Silk Screening	pg. 12 - 13
EMI/RFI Shielding	pg. 12 - 13
Custom Window	pg. 12 - 13
Custom Cutouts/Holes	pg. 12 - 13



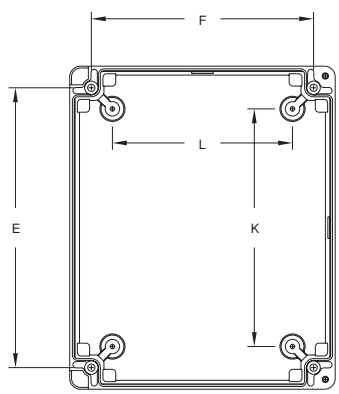


SECTION B-B





SECTION A-A



FRONT VIEW
WITHOUT COVER

Classic Window Series Flush Bonded Window Enclosures

Classic Window Series Flush Bonded Window Enclosures

SIZE ID 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	SHIPPING WEIGHT	PANEL NUMBER
CLW707HW CLW707HPL	7.21 x 7.21 x 5.09 (183 x 183 x 129)	6.65 x 6.65 x 4.84 (169 x 169 x 123)	5.06 x 5.06 (129 x 129)	5.71 x 5.71 (145 x 145)	4.39 (111)	4.25 (108)	4.25 (108)	4.04 (103)	4.04 (103)	4 lbs.	BP66*
CLW907HW CLW907HPL	9.21 x 7.21 x 5.09 (234 x 183 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)	4.39 (111)	6.25 (159)	4.25 (108)	6.04 (154)	4.04 (103)	4.3 lbs.	BP86*
CLW1109HW CLW1109HPL	11.21 x 9.21 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)	5.39 (137)	8.25 (210)	6.25 (159)	8.04 (204)	6.04 (154)	6 lbs.	BP108*
CLW1311W CLW1311HW CLW1311HLL CLW1311HPL	13.21 x 11.21 x 6.59 (336 x 285 x 167)	12.59 x 10.59 x 6.34 (320 x 269 x 161)	11.06 x 9.06 (281 x 230)	11.71 x 9.71 (298 x 247)	5.89 (150)	10.25 (260)	8.25 (210)	10.04 (255)	8.04 (204)	7.8 lbs.	BP1210*
CLW1513HW CLW1513HLL CLW1513HPL	15.21 x 13.21 x 7.09 (386 x 336 x 180)	14.55 x 12.55 x 6.84 (370 x 319 x 174)	13.06 x 11.06 (332 x 281)	13.71 x 11.71 (348 x 298)	6.39 (162)	12.25 (311)	10.25 (260)	12.04 (306)	10.04 (255)	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 ordered separately.

The CF and F Series

The CF and F Series is built around two enclosure designs. Both feature a slim style with flush side walls, while the F Series features an overhang cover style. Both are designed from fiberglass reinforced polyester 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. Both of these streamlined series feature unobstructed sidewalls, captive stainless steel 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.

CF and F Series Attributes

- Memory retaining continuous polyurethane gasket
- Captive stainless steel cover screws
- Chemically resistant fiberglass reinforced polyester
- Submersible, non corrosive, environmental design
- High impact resistance

CF Series Industry Standards

UL/cUL 50	File E64358 Type 1, 3R, 4X, 6P, 12
NEMA 250	Type 1, 3R, 4X, 6P, 12
CSA Std C22.2	File LR069014 Type 1, 3R, 4X, 6P, 12
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)

Technical Specifications - CF Series

"CF" configuration - 4 cover screws, lift off cover

NOTES:

CF Construction

Material	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

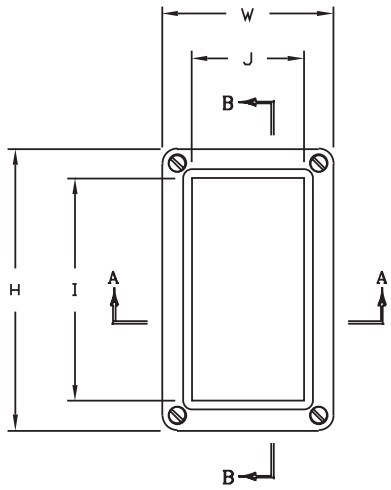
CF Industry Standards

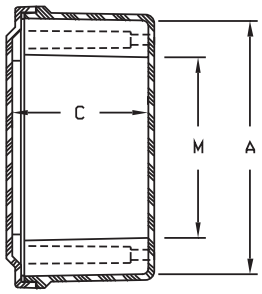
UL/cUL 50	File E64358 Type 1, 3R, 4X, 6P, 12
NEMA 250	Type 1, 3R, 4X, 6P, 12
CSA Std 22.2	File LR069014 Type 1, 3R, 4X, 6P, 12
Temperature Range	(-76°F to +274°F) (-60°C to +134°C)
Flammability Rating	UL94-5V
Self Extinguishing	Non-halogenated, non-flame propagating
Chemical Resistance	Full chemical resistance charts listed in appendix
NFPA No. 101 Flame Spread	Class A (1)

CF Modifications

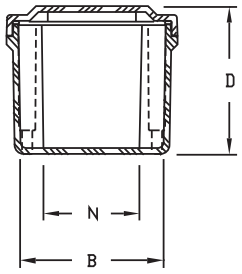
Custom Colors	pg. 12 - 13
Silk Screening	pg. 12 - 13
EMI/RFI Shielding	pg. 12 - 13
Custom Window	pg. 12 - 13
Custom Cutouts/Holes	pg. 12 - 13

CF Series Technical Drawings

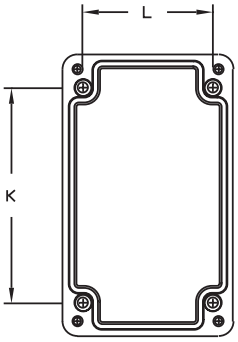




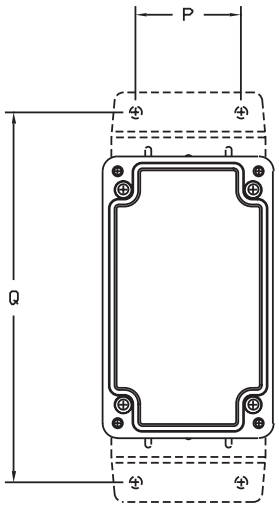
SECTION B–B



SECTION A–A



FRONT VIEW
WITHOUT COVER



CF Series Enclosures

SIZE ID NUMBER	OVERALL H X W X D	INSIDE A X B X C	I	J	K	L	M	N	P	Q	SHIPPING 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)	2.2 (56)	4.4 (112)	0.9 lbs.
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)	2.2 (56)	6.7 (169)	1.2 lbs.
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)	2.2 (56)	7.3 (186)	1.5 lbs.
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)	2.2 (56)	9.1 (231)	1.5 lbs.
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)	2.2 (56)	9.6 (243)	1.8 lbs.
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)	2.2 (56)	10.1 (256)	1.6 lbs.
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)	2.2 (56)	11.8 (300)	2.1 lbs.
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)	2.2 (56)	14.5 (368)	2.1 lbs.
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)	2.2 (56)	18 (458)	2.8 lbs.

*Flat Cover

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

Technical Specifications - Small Junction Series

"F" configuration - 4 cover screws, lift off cover

NOTES:

F Construction

Material	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.
Cover retention	Stainless steel beaded cover retention chain
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

F Industry Standards

UL/cUL 50	File E64358 Type 1, 3R, 4X, 6P, 12
NEMA 250	Type 1, 3R, 4X, 6P, 12
CSA Std 22.2	File LR069014 Type 1, 3R, 4X, 6P, 12
Temperature Range	(-76°F to +274°F) (-60°C to +134°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)

F Accessories

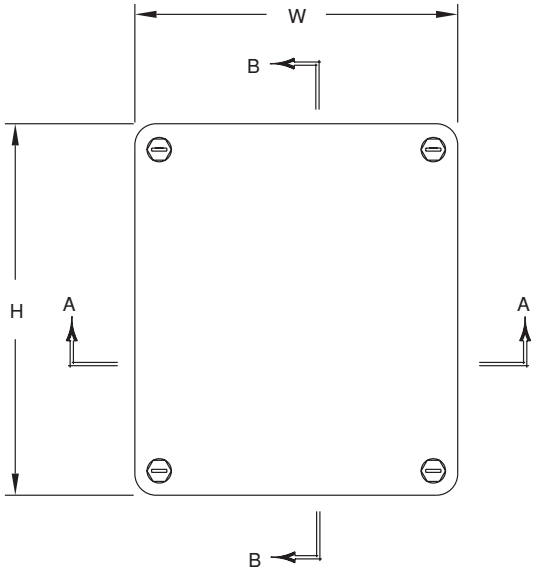
Back Panels

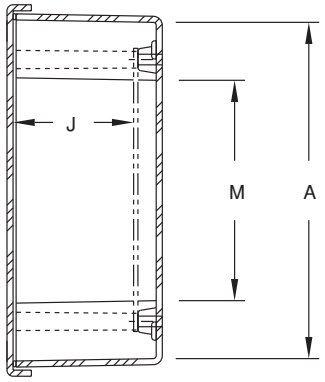
Aluminum	BP__AL	pg. 149 - 150
Fiberglass	BP__FG	pg. 149 - 150
Stainless Steel	BP__SS	pg. 149 - 150
Carbon Steel	BP__CS	pg. 149 - 150

F Modifications

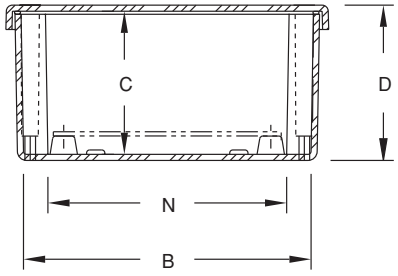
Custom Colors	pg. 12 - 13
Silk Screening	pg. 12 - 13
EMI/RFI Shielding	pg. 12 - 13
Custom Window	pg. 12 - 13
Custom Cutouts/Holes	pg. 12 - 13

F Series Technical Drawings

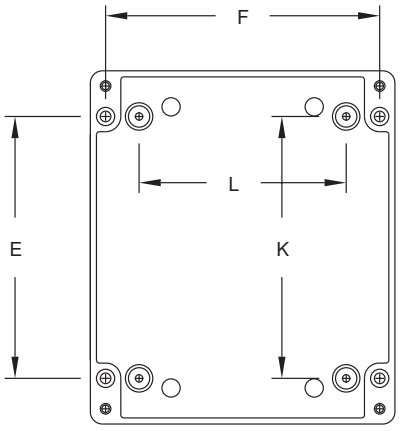




SECTION B-B



SECTION A-A



FRONT VIEW
WITHOUT COVER

F Series Enclosures

SIZE ID NUMBER	OVERALL H X W X D	INSIDE A X B X C	MOUNTING E X F	J	K	L	M	N	SHIPPING WEIGHT	PANEL NUMBER
F 763	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*
F 963	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*

*Panel ordered separately

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

The Pushbutton Series

The Pushbutton Series includes two separate enclosure designs, an in-line style and a multi-hole style configuration. Both are designed from fiberglass reinforced polyester and 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. If panel mounting is required, the preferred enclosure would be the multi-hole pushbutton. Unobstructed side-walls, captive stainless steel cover screws and a full range of sizes makes this a most versatile offering. This 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.

Pushbutton Series Attributes

- Flush cover design
- Memory retaining continuous polyurethane gasket
- Captive stainless steel cover screws
- Full metal grounding strap
- Notched key hole design
- Chemically resistant fiberglass reinforced polyester
- Submersible, non corrosive, environmental design
- Available in 30mm and 22mm configurations

Pushbutton Industry Standards

UL/cUL 50	File E64358 Type 1, 3, 4X, 6P, 12
NEMA 250	Type 1, 3, 4X, 6P, 12
CSA Std 22.2	File LR069014 Type 1, 3, 4X, 6P, 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)

Technical Specifications - Pushbutton Series

"CF" configuration - 4 cover screws, lift off cover 30mm

NOTES:

CF Construction

Material	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

CF Industry Standards

UL/cUL 50	File E64358 Type 1, 3R, 4X, 6P, 12
NEMA 250	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)
Flammability Rating	UL94-5V
Self Extinguishing	Non-flame propagating
Chemical Resistance	Full chemical resistance charts listed in appendix
NFPA No. 101 Flame Spread	Class A (1)

CF Accessories

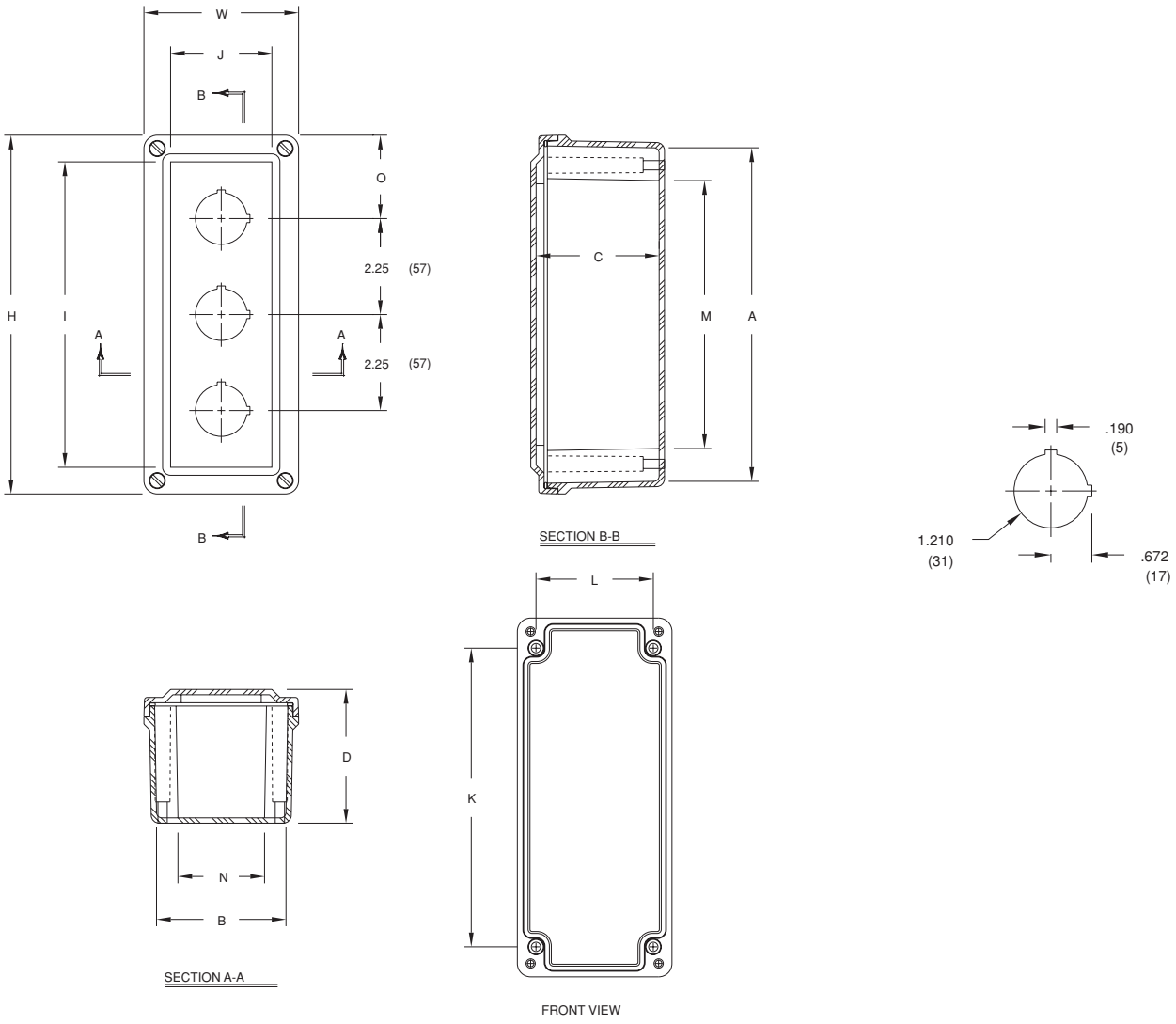
Mounting Feet

Mounting Feet pg. 157

CF Modifications

Custom Colors	pg. 12 - 13
Custom Painting	pg. 12 - 13
Silk Screening	pg. 12 - 13
Custom Cutouts/Holes	pg. 12 - 13

Pushbutton Series "30mm In-Line" Configuration Technical Drawings



Pushbutton Series Enclosures - "30mm In-Line" Configuration Dimensions

SIZE ID NUMBER	OVERALL H X W X D	INSIDE A X B X C	I	J	K	L	M	N	O	SHIPPING 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: Shown CF3PB for Reference.

Technical Specifications - Pushbutton Series

"CF" configuration - 4 cover screws, lift off cover 22mm

NOTES:

CF Construction

Material	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

CF Industry Standards

UL/cUL 50	File E64358 Type 1, 3R, 4X, 6P, 12
NEMA 250	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)
Flammability Rating	UL94-5V
Self Extinguishing	Non-flame propagating
Chemical Resistance	Full chemical resistance charts listed in appendix
NFPA No. 101 Flame Spread	Class A (1)

CF Accessories

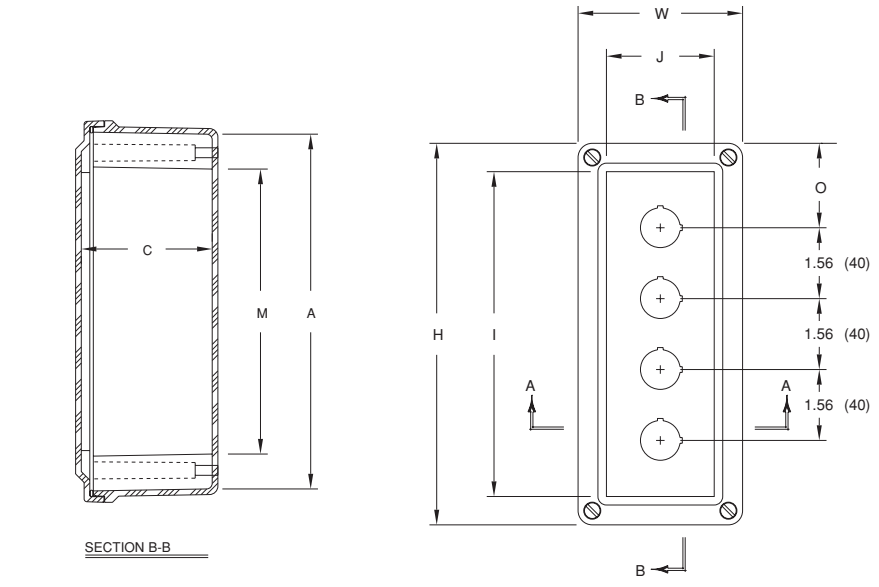
Mounting Feet

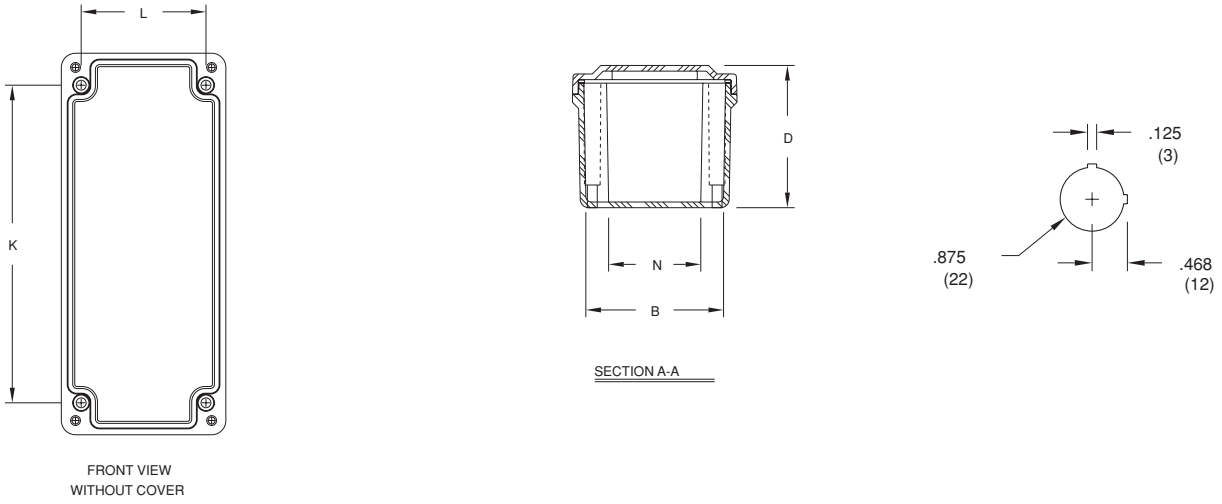
Mounting Feet pg. 157

CF Modifications

Custom Colors	pg. 12 - 13
Custom Painting	pg. 12 - 13
Silk Screening	pg. 12 - 13
Custom Cutouts/Holes	pg. 12 - 13

Pushbutton Series "22mm In-Line" Configuration Technical Drawings





Pushbutton Series Enclosures - "22mm In-Line" Configuration Dimensions

SIZE ID NUMBER	OVERALL H X W X D	INSIDE A X B X C	I	J	K	L	M	N	O	SHIPPING WEIGHT
CF1PB-22	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.
CF2PB-22	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.
CF3PB-22	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.
CF4PB-22	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.
CF5PB-22	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.
CF6PB-22	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: Shown CF4PB-22 for Reference.

Technical Specifications - Pushbutton Series

"F" configuration - 4 cover screws, lift off cover 30mm

NOTES:

F Construction

Material	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	Stainless steel beaded cover retention chain
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

F Industry Standards

UL/cUL 50	File E64358 Type 1, 3R, 4X, 6P, 12
NEMA 250	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)
Flammability Rating	UL94-5V
Self Extinguishing	Non-flame propagating
Chemical Resistance	Full chemical resistance charts listed in appendix
NFPA No. 101 Flame Spread	Class A (1)

F Accessories

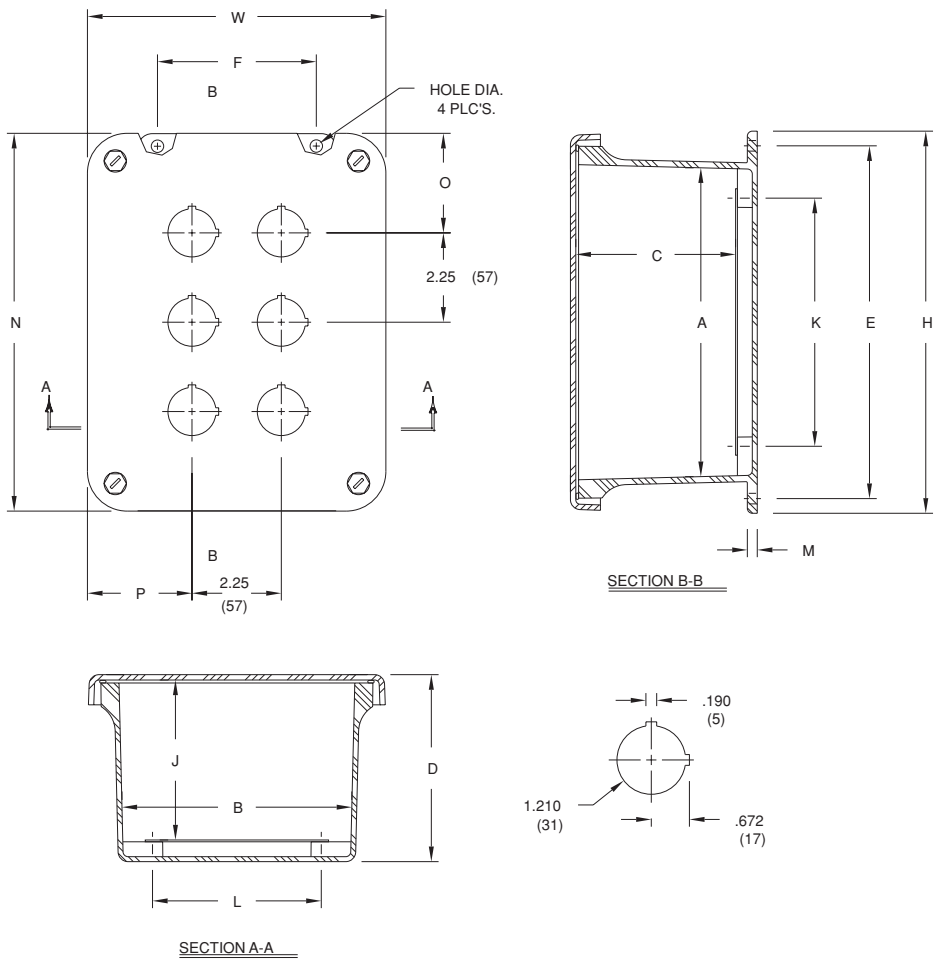
Mounting Feet

Mounting Feet pg. 155

F Modifications

Custom Colors	pg. 12 - 13
Custom Painting	pg. 12 - 13
Silk Screening	pg. 12 - 13
Custom Cutouts/Holes	pg. 12 - 13

Pushbutton Series "Multi-Hole" Configuration Technical Drawings



Pushbutton Series Enclosures - "Multi-Hole" Configuration Dimensions

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.	SHIPPING WT.	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: Shown F6PBW for Reference.

* Panel ordered separately.

The J/RJ Series

J

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.

If extra depth is required, the 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. There is a multitude of variations available in this simple but elegant design.

J/RJ Series Attributes

- Available in 3 cover options on certain size enclosures:
  1. Opaque Cover
  2. Flush Bonded Window
  3. Clear Polycarbonate Cover
- 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
- Submersible, non corrosive, environmental designs
- Stainless steel retention chain on screw covers
- Continuous polyurethane gasket

J/RJ Series Industry Standards

UL/cUL 50	File E64358 Type 1, 3R, 4X, 6P, 12
NEMA 250	Type 1, 3R, 4X, 6P, 12
CSA Std C22.2	File LR069014 Type 1, 3R, 4X, 6P, 12
UL1741	File E333478 W, HW, HPL, FHW, FHPL
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
Cover Flammability	UL94-V0
Window Flammability	UL94-HB
Self extinguishing	Non-haloginated, non-flame propagating
Chemical Resistance	Full chemical resistance charts listed in appendix
NFPA No. 101 Flame Spread	Class A (1)

W

Technical Specifications - J Series

Opaque Cover "W" configuration - 4 cover screws, lift off cover

NOTES:

W Construction

Material	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
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

W Industry Standards

UL/cUL 50	File E64358 Type 1, 3R, 4X, 6P, 12
NEMA 250	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)
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)

W Accessories

Back Panels

Aluminum	BP__AL	pg. 149 - 150
Fiberglass	BP__FG	pg. 149 - 150
Stainless Steel	BP__SS	pg. 149 - 150
Carbon Steel	BP__CS	pg. 149 - 150

Accessories

Drain & Breather Vents	pg. 144, 146
Hole Plugs	pg. 145
Assorted Hubs and Cord Grips	pg. 145, 148
All Other Accessories	pg. 144 - 159

W Modifications

Custom Colors	pg. 12 - 13
Silk Screening	pg. 12 - 13
EMI/RFI Shielding	pg. 12 - 13
Custom Window	pg. 12 - 13
Custom Cutouts/Holes	pg. 12 - 13

HW Technical Specifications - J Series

Opaque Cover "HW" configuration - Hinged, 2 cover screws

NOTES:

HW Construction

Material	Hot compression molded fiberglass reinforced polyester (thermoset). Available standard in Glacier Grey or White
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
Soft Edge Design	Rounded edges, minimal protrusions or exposed pocket areas for assembly of dust and debris
Color	Available Standard in Glacier Grey or White

HW Industry Standards

UL/cUL 50	File E64358 Type 1, 3R, 4X, 6P, 12
NEMA 250	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)
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)

HW Accessories

Back Panels

Aluminum	BP__AL	pg. 149 - 150
Fiberglass	BP__FG	pg. 149 - 150
Stainless Steel	BP__SS	pg. 149 - 150
Carbon Steel	BP__CS	pg. 149 - 150

Accessories

Drain & Breather Vents	pg. 144, 146
Hole Plugs	pg. 145
Assorted Hubs and Cord Grips	pg. 145, 148
All Other Accessories	pg. 144 - 159

HW Modifications

Custom Colors	pg. 12 - 13
Silk Screening	pg. 12 - 13
EMI/RFI Shielding	pg. 12 - 13
Custom Window	pg. 12 - 13
Custom Cutouts/Holes	pg. 12 - 13

Technical Specifications - J Series

Opaque Cover "HLL" configuration - Hinged, twist latch

NOTES:

HLL Construction

Material	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
Soft Edge Design	Rounded edges, minimal protrusions or exposed pocket areas for assembly of dust and debris

HLL Industry Standards

UL/cUL 50	File E64358 Type 1, 3R, 4X, 6P, 12
NEMA 250	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)
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)

HLL Accessories

Back Panels

Aluminum	BP__AL	pg. 149 - 150
Fiberglass	BP__FG	pg. 149 - 150
Stainless Steel	BP__SS	pg. 149 - 150
Carbon Steel	BP__CS	pg. 149 - 150

Accessories

Drain & Breather Vents	pg. 144, 146
Hole Plugs	pg. 145
Assorted Hubs and Cord Grips	pg. 145, 148
All Other Accessories	pg. 144 - 159

HLL Modifications

Custom Colors	pg. 12 - 13
Silk Screening	pg. 12 - 13
EMI/RFI Shielding	pg. 12 - 13
Custom Window	pg. 12 - 13
Custom Cutouts/Holes	pg. 12 - 13

Technical Specifications - J Series

Opaque Cover "HPL" configuration - Hinged, padlock latch

NOTES:

HPL Construction

Material	Hot compression molded fiberglass reinforced polyester (thermoset). Available standard in Glacier Grey or White
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
Soft Edge Design	Rounded edges, minimal protrusions or exposed pocket areas for assembly of dust and debris
Color	Available Standard in Glacier Grey or White

HPL Industry Standards

UL/cUL 50	File E64358 Type 1, 3R, 4X, 6P, 12
NEMA 250	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)
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)

HPL Accessories

Back Panels

Aluminum	BP__AL	pg. 149 - 150
Fiberglass	BP__FG	pg. 149 - 150
Stainless Steel	BP__SS	pg. 149 - 150
Carbon Steel	BP__CS	pg. 149 - 150

Accessories

Drain & Breather Vents	pg. 144, 146
Hole Plugs	pg. 145
Assorted Hubs and Cord Grips	pg. 145, 148
All Other Accessories	pg. 144 - 159

HPL Modifications

Custom Colors	pg. 12 - 13
Silk Screening	pg. 12 - 13
EMI/RFI Shielding	pg. 12 - 13
Custom Window	pg. 12 - 13
Custom Cutouts/Holes	pg. 12 - 13

Technical Specifications - J Series

Opaque Cover "FHW" configuration - Fiberglass hinge, four cover screws

NOTES:

FHW *Construction*

Material	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
Soft Edge Design	Rounded edges, minimal protrusions or exposed pocket areas for assembly of dust and debris
Hinge Material	Glass filled Polybutylene Terephthalate (PBT)

FHW *Industry Standards*

UL/cUL 50	File E64358 Type 1, 3R, 4X, 6P, 12
NEMA 250	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)
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)

FHW *Accessories*

Back Panels

Aluminum	BP__AL	pg. 149 - 150
Fiberglass	BP__FG	pg. 149 - 150
Stainless Steel	BP__SS	pg. 149 - 150
Carbon Steel	BP__CS	pg. 149 - 150

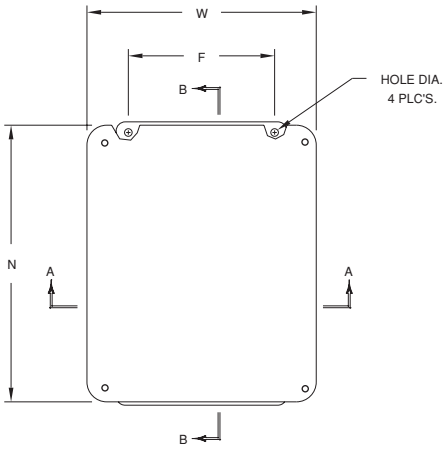
Accessories

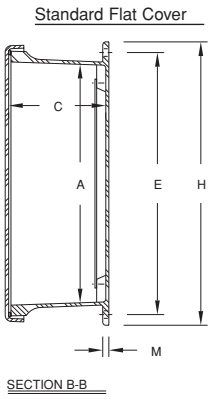
Drain & Breather Vents	pg. 144, 146
Hole Plugs	pg. 145
Assorted Hubs and Cord Grips	pg. 145, 148
All Other Accessories	pg. 144 - 159

FHW *Modifications*

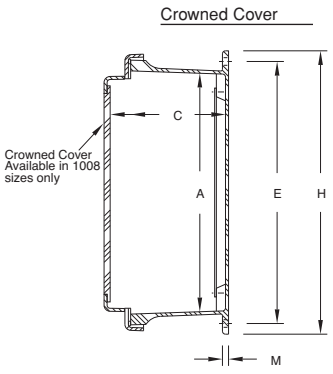
Custom Colors	pg. 12 - 13
Silk Screening	pg. 12 - 13
EMI/RFI Shielding	pg. 12 - 13
Custom Window	pg. 12 - 13
Custom Cutouts/Holes	pg. 12 - 13

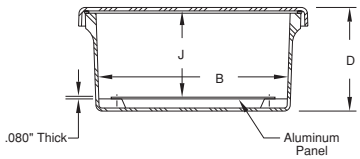
continued on following pages



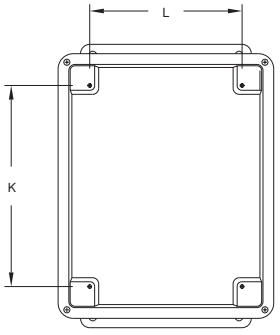


SECTION B-B





SECTION A-A

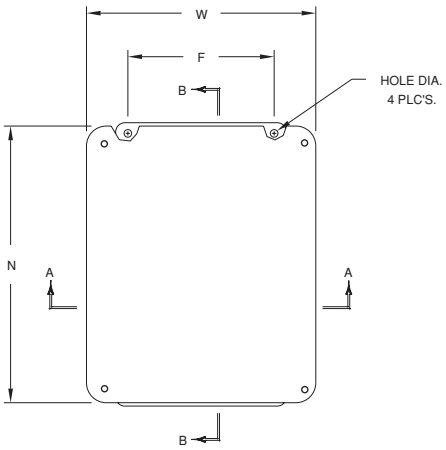


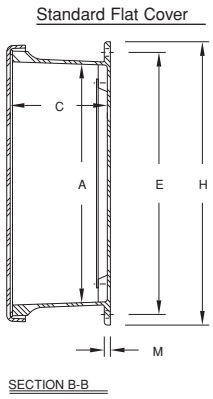
FRONT VIEW
WITHOUT COVER

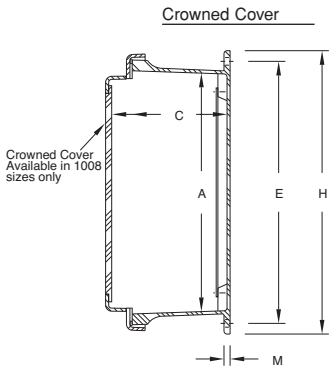
J Series Enclosures - Opaque Cover

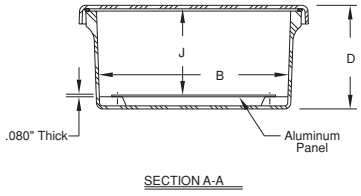
SIZE ID NUMBER	OVERALL H X W X D	INSIDE A X B X C	MOUNTING E X F	J	K	L	M	N	HOLE DIA.	SHIPPING WEIGHT	PANEL NUMBER
J604W J604HW*** J604HLL J604HPL***	7.47 x 5.45 x 4.70 (190 x 138 x 119)	5.84 x 3.85 x 4.45 (148 x 98 x 113)	6.75 x 2.00 (171 x 51)	3.97 (101)	4.25 (108)	2.25 (57)	0.25 (6)	7.39 (188)	0.31 (8)	2.40 lbs.	BP64**
J606W J606HW*** J606HLL J606HPL***	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**
J806W J806HW*** J806HLL J806HPL*** 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**
J808W J808HW*** J808HLL J808HPL*** J808FHW	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**

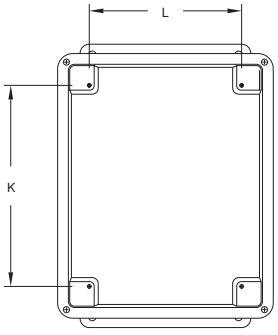
All measures are in inches, items in parentheses are in millimeters.
*Crowned cover – center of cover raised 3/4"
**Panel ordered separately
***Available in white by placing WH prior to part number ex. WH-J604HW









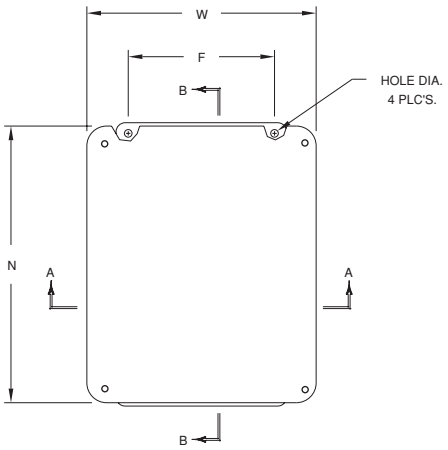


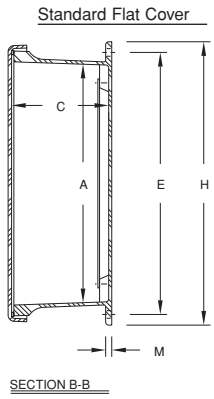
J Series Enclosures - Opaque Cover

SIZE ID NUMBER	OVERALL H X W X D	INSIDE A X B X C	MOUNTING E X F	J	K	L	M	N	HOLE DIA.	SHIPPING WEIGHT	PANEL NUMBER
J1008W J1008HW*** J1008HLL J1008HPL*** J1008FHW	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**
J1008WA* J1008HWA* J1008HALL* J1008FHAPL* J1008FHWA* Crowned Cover	11.63 x 9.37 x 5.08 (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**
J100806W J100806HW*** J100806HLL J100806HPL*** J100806FHW	11.97 x 9.42 x 6.50 (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**
J1210W J1210HW*** J1210HLL J1210HPL*** 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**
J1212W J1212HW*** J1212HLL J1212HPL*** J1212FHW	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**

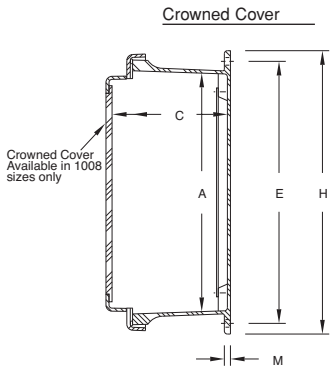
All measures are in inches, items in parentheses are in millimeters.
*Crowned cover – center of cover raised 3/4"
** Panel ordered separately
***Available in white by placing WH prior to part number ex. WH-J604HW

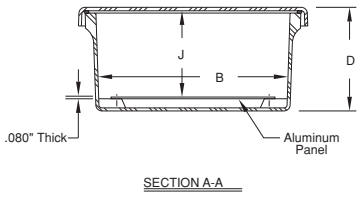
J Series Technical Information



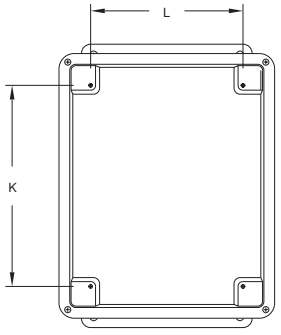


SECTION B-B





SECTION A-A



FRONT VIEW
WITHOUT COVER

J Series Enclosures - Opaque Cover

SIZE ID NUMBER	OVERALL H X W X D	INSIDE A X B X C	MOUNTING E X F	J	K	L	M	N	HOLE DIA.	SHIPPING WEIGHT	PANEL NUMBER
J1407W J1407HW*** J1407HLL J1407HPL*** J1407FHW	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**
J1412W J1412HW*** J1412HLL J1412HPL*** J1412FHW	15.50 x 13.48 x 6.20 (394 x 342 x 158)	13.50 x 11.52 x 5.94 (343 x 293 x 151)	14.62 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**
J1614W J1614HW*** J1614HLL J1614HPL*** 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**
J1816W J1816HW*** J1816HLL J1816HPL*** J1816FHW	19.63 x 17.61 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**
J2016W J2016HW*** J2016HLL J2016HPL*** J2016FHW	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**

All measures are in inches, items in parentheses are in millimeters.
*Crowned cover – center of cover raised 3/4"
** Panel ordered separately
***Available in white by placing WH prior to part number ex. WH-J604HW

Technical Specifications - JW Series

Flush Bonded Window "HLL" configuration - Hinged, twist latch

NOTES:

HLL Construction

Material	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 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

HLL Industry Standards

UL/cUL 50	File E64358 Type 1, 3R, 4X, 6P, 12
NEMA 250	Type 1, 3R, 4X, 6P, 12
CSA Std C22.2	File LR069014 Type 1, 3R, 4X, 6P, 12
Temperature Range	(-26°F to +170°F) (-32°C to +76°C)
Temperature Range Window	(-26°F to +170°F) (-32°C to +76°C)
Flammability Rating	UL94-5V
Window Flammability	UL94V-HB
Self Extinguishing	Non-halogenated, Non-flame propagating
Chemical Resistance	Full chemical resistance charts listed in appendix
NFPA No. 101 Flame Spread	Class A (1)

HLL Accessories

Back Panels

Aluminum	BP__AL	pg. 149 - 150
Fiberglass	BP__FG	pg. 149 - 150
Stainless Steel	BP__SS	pg. 149 - 150
Painted Carbon Steel	BP__CS	pg. 149 - 150

Accessories

Drain & Breather Vents	pg. 144, 146
Hole Plugs	pg. 145
Assorted Hubs and Cord Grips	pg. 145, 148
All Other Accessories	pg. 144 - 159

HLL Modifications

Custom Colors	pg. 12 - 13
Silk Screening	pg. 12 - 13
EMI/RFI Shielding	pg. 12 - 13
Custom Window	pg. 12 - 13
Custom Cutouts/Holes	pg. 12 - 13

Technical Specifications - JW Series

Flush Bonded Window "HPL" configuration - Hinged, padlock latch

NOTES:

HPL Construction

Material	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 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

HPL Industry Standards

UL/cUL 50	File E64358 Type 1, 3R, 4X, 6P, 12
NEMA 250	Type 1, 3R, 4X, 6P, 12
CSA Std C22.2	File LR069014 Type 1, 3R, 4X, 6P, 12
Temperature Range	(-26°F to +170°F) (-32°C to +76°C)
Temperature Range Window	(-26°F to +170°F) (-32°C to +76°C)
Flammability Rating	UL94-5V
Window Flammability	UL94V-HB
Self Extinguishing	Non-halogenated, Non-flame propagating
Chemical Resistance	Full chemical resistance charts listed in appendix
NFPA No. 101 Flame Spread	Class A (1)

HPL Accessories

Back Panels

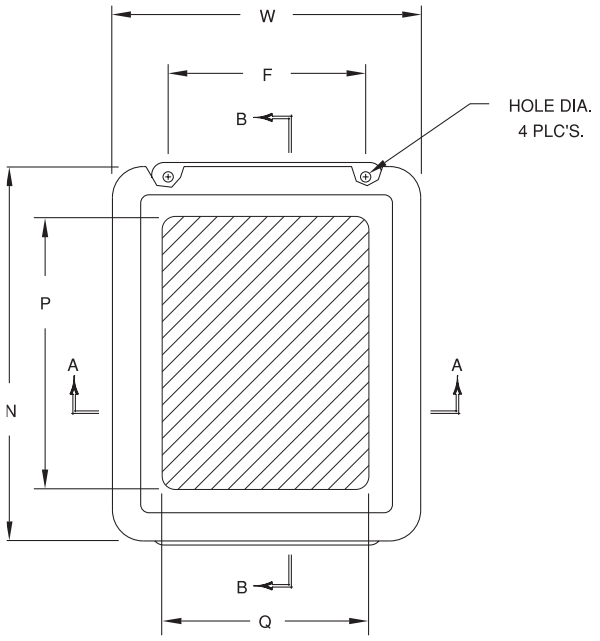
Aluminum	BP__AL	pg. 149 - 150
Fiberglass	BP__FG	pg. 149 - 150
Stainless Steel	BP__SS	pg. 149 - 150
Painted Carbon Steel	BP__CS	pg. 149 - 150

Accessories

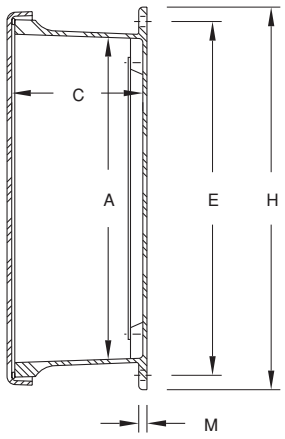
Drain & Breather Vents	pg. 144, 146
Hole Plugs	pg. 145
Assorted Hubs and Cord Grips	pg. 145, 148
All Other Accessories	pg. 144 - 159

HPL Modifications

Custom Colors	pg. 12 - 13
Silk Screening	pg. 12 - 13
EMI/RFI Shielding	pg. 12 - 13
Custom Window	pg. 12 - 13
Custom Cutouts/Holes	pg. 12 - 13

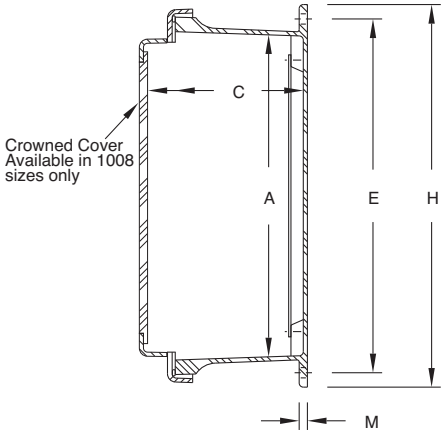


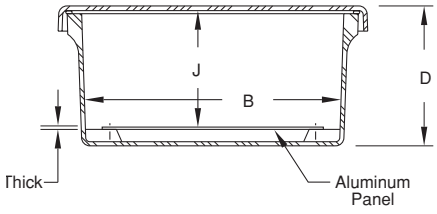
Standard Flat Cover



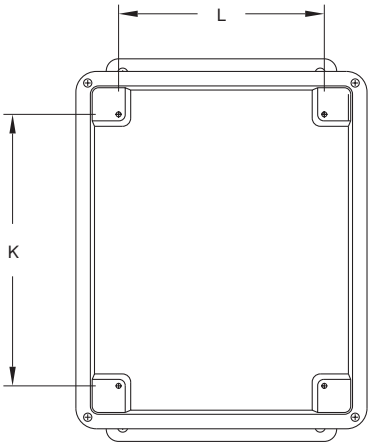
SECTION B-B

Crowned Cover





SECTION A-A



FRONT VIEW
WITHOUT COVER

JW Series Enclosures

SIZE ID 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	M	N	HOLE DIA.	SHIPPING WEIGHT	PANEL NUMBER
JW604HLL JW604HPL	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)	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**
JW606HLL JW606HPL	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)	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**
JW806HLL JW806HPL	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)	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 4.62 (196 x 196 x 117)	8.75 x 6.00 (222 x 152)	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**
JW1008HLL JW1008HPL	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)	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**
JW1008HALL* JW1008HAPL* Crowned Cover	11.63 x 9.37 x 5.08 (295 x 238 x 129)	9.73 x 7.73 x 4.71 (247 x 196 x 120)	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**
JW100806HLL JW100806HPL	11.97 x 9.42 x 6.50 (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**
JW1210HLL JW1210HPL	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)	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**
JW1212HLL JW1212HPL	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)	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 6.56 (356 x 178 x 167)	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**
JW1412HLL JW1412HPL	15.50 x 13.48 x 6.20 (394 x 342 x 158)	13.50 x 11.52 x 5.94 (343 x 293 x 151)	12.25 x 10.25 (311 x 260)	14.62 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**
JW1614HLL JW1614HPL	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)	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**
JW1816HLL JW1816HPL	19.63 x 17.61 x 8.81 (499 x 447 x 224)	17.69 x 15.69 x 8.45 (449 x 399 x 215)	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**
JW2016HLL JW2016HPL	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)	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

W

Technical Specifications - RJ Series

Raised Cover "W" configuration - 4 cover screws, lift off cover

NOTES:

W Construction

Material	Hot compression molded fiberglass reinforced polyester
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
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

W Industry Standards

UL/cUL 50	File E64358 Type 1, 3R, 4X, 6P, 12
NEMA 250	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)
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)

W Accessories

Back Panels

Aluminum	BP__AL	pg. 149 - 150
Fiberglass	BP__FG	pg. 149 - 150
Stainless Steel	BP__SS	pg. 149 - 150
Painted Carbon Steel	BP__CS	pg. 149 - 150

Accessories

Drain & Breather Vents	pg. 144, 146
Hole Plugs	pg. 145
Assorted Hubs and Cord Grips	pg. 145, 148
All Other Accessories	pg. 144 - 159

W Modifications

Custom Colors	pg. 12 - 13
Silk Screening	pg. 12 - 13
EMI/RFI Shielding	pg. 12 - 13
Custom Window	pg. 12 - 13
Custom Cutouts/Holes	pg. 12 - 13

HW Technical Specifications - RJ Series

Raised Cover "HW" configuration - Hinged, 2 cover screws

NOTES:

HW Construction

Material	Hot compression molded fiberglass reinforced polyester
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
Soft Edge Design	Rounded edges, minimal protrusions or exposed pocket areas for assembly of dust and debris
Raised cover	Extended depth in cover

HW Industry Standards

UL/cUL 50	File E64358 Type 1, 3R, 4X, 6P, 12
NEMA 250	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)
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)

HW Accessories

Back Panels

Aluminum	BP__AL	pg. 149 - 150
Fiberglass	BP__FG	pg. 149 - 150
Stainless Steel	BP__SS	pg. 149 - 150
Painted Carbon Steel	BP__CS	pg. 149 - 150

Accessories

Drain & Breather Vents	pg. 144, 146
Hole Plugs	pg. 145
Assorted Hubs and Cord Grips	pg. 145, 148
All Other Accessories	pg. 144 - 159

HW Modifications

Custom Colors	pg. 12 - 13
Silk Screening	pg. 12 - 13
EMI/RFI Shielding	pg. 12 - 13
Custom Window	pg. 12 - 13
Custom Cutouts/Holes	pg. 12 - 13

Technical Specifications - RJ Series

Raised Cover "HLL" configuration - Hinged, twist latch

NOTES:

HLL Construction

Material	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 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

HLL Industry Standards

UL/cUL 50	File E64358 Type 1, 3R, 4X, 6P, 12
NEMA 250	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)
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)

HLL Accessories

Back Panels

Aluminum	BP__AL	pg. 149 - 150
Fiberglass	BP__FG	pg. 149 - 150
Stainless Steel	BP__SS	pg. 149 - 150
Painted Carbon Steel	BP__CS	pg. 149 - 150

Accessories

Drain & Breather Vents	pg. 144, 146
Hole Plugs	pg. 145
Assorted Hubs and Cord Grips	pg. 145, 148
All Other Accessories	pg. 144 - 159

HLL Modifications

Custom Colors	pg. 12 - 13
Silk Screening	pg. 12 - 13
EMI/RFI Shielding	pg. 12 - 13
Custom Window	pg. 12 - 13
Custom Cutouts/Holes	pg. 12 - 13

Technical Specifications - RJ Series

Raised Cover "HPL" configuration - Hinged, padlock latch

NOTES:

HPL Construction

Material	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 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

HPL Industry Standards

UL/cUL 50	File E64358 Type 1, 3R, 4X, 6P, 12
NEMA 250	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)
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)

HPL Accessories

Back Panels

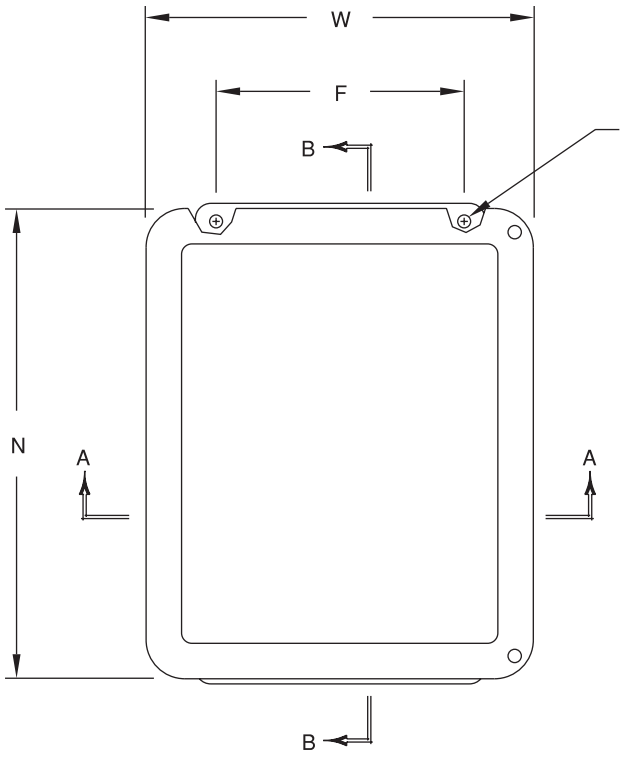
Aluminum	BP__AL	pg. 149 - 150
Fiberglass	BP__FG	pg. 149 - 150
Stainless Steel	BP__SS	pg. 149 - 150
Painted Carbon Steel	BP__CS	pg. 149 - 150

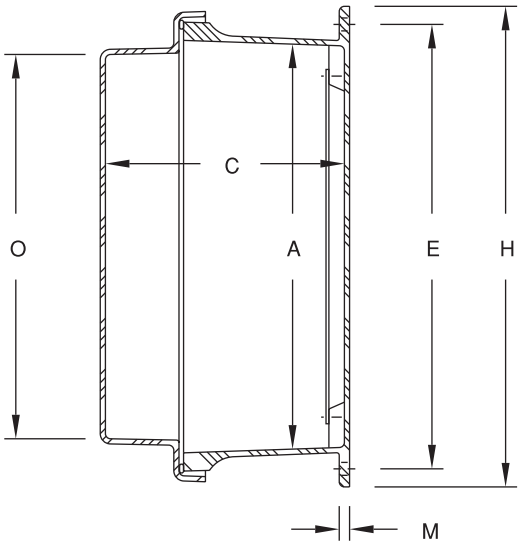
Accessories

Drain & Breather Vents	pg. 144, 146
Hole Plugs	pg. 145
Assorted Hubs and Cord Grips	pg. 145, 148
All Other Accessories	pg. 144 - 159

HPL Modifications

Custom Colors	pg. 12 - 13
Silk Screening	pg. 12 - 13
EMI/RFI Shielding	pg. 12 - 13
Custom Window	pg. 12 - 13
Custom Cutouts/Holes	pg. 12 - 13





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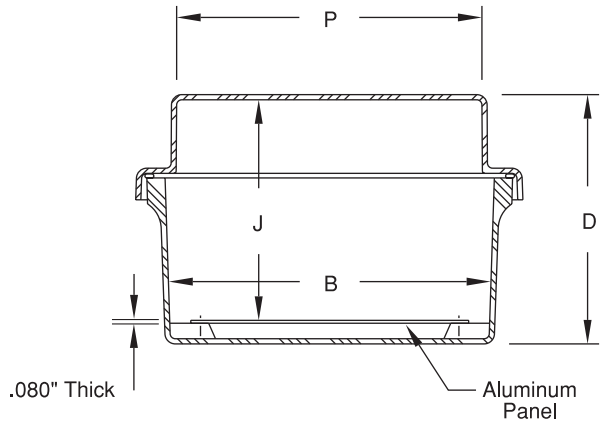
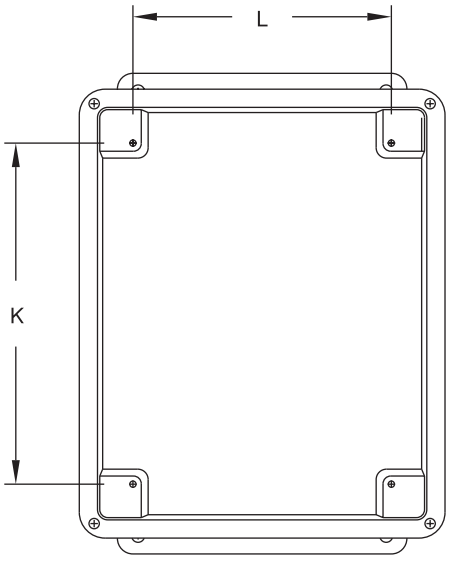


SECTION A-A



FRONT VIEW
WITHOUT COVER

RJ Series Opaque Cover Enclosures

SIZE ID 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.	SHIPPING WEIGHT	PANEL NUMBER
RJ604W RJ604HW RJ604HLL RJ604HPL	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*
RJ606W RJ606HW RJ606HLL RJ606HPL	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*
RJ806W RJ806HW RJ806HLL RJ806HPL	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*
RJ808W RJ808HW 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*
RJ1008W RJ1008HW RJ1008HLL RJ1008HPL	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*
RJ1210W RJ1210HW RJ1210HLL RJ1210W	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*
RJ1212W RJ1212HW RJ1212HLL RJ1212HPL	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*
RJ1412W RJ1412HW RJ1412HLL RJ1412HPL	15.50 x 13.38 x 7.69 (394 x 340 x 195)	13.50 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*
RJ1614W RJ1614HW RJ1614HLL RJ1614HPL	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*
RJ1816W RJ1816HW RJ1816HLL RJ1816HPL	19.63 x 17.48 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*
RJ2016W RJ2016HW RJ2016HLL RJ2016HPL	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 ordered separately.

Technical Specifications - RJW Series

Flush Bonded Window "HLL" configuration - Hinged, twist latch

NOTES:

HLL Construction

Material	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 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

HLL Industry Standards

UL/cUL 50	File E64358 Type 1, 3R, 4X, 6P, 12
NEMA 250	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
Window Flammability	UL94V-HB
Self Extinguishing	Non-halogenated, non-flame propagating
Chemical Resistance	Full chemical resistance charts listed in appendix
NFPA No. 101 Flame Spread	Class A (1)

HLL Accessories

Back Panels

Aluminum	BP__AL	pg. 149 - 150
Fiberglass	BP__FG	pg. 149 - 150
Stainless Steel	BP__SS	pg. 149 - 150
Painted Carbon Steel	BP__CS	pg. 149 - 150

Accessories

Drain & Breather Vents	pg. 144, 146
Hole Plugs	pg. 145
Assorted Hubs and Cord Grips	pg. 145, 148
All Other Accessories	pg. 144 - 159

HLL Modifications

Custom Colors	pg. 12 - 13
Silk Screening	pg. 12 - 13
EMI/RFI Shielding	pg. 12 - 13
Custom Window	pg. 12 - 13
Custom Cutouts/Holes	pg. 12 - 13

Technical Specifications - RJW Series

Flush Bonded Window "HPL" configuration - Hinged, padlock latch

NOTES:

HPL Construction

Material	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 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

HPL Industry Standards

UL/cUL 50	File E64358 Type 1, 3R, 4X, 6P, 12
NEMA 250	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
Window Flammability	UL94V-HB
Self Extinguishing	Non-halogenated, non-flame propagating
Chemical Resistance	Full chemical resistance charts listed in appendix
NFPA No. 101 Flame Spread	Class A (1)

HPL Accessories

Back Panels

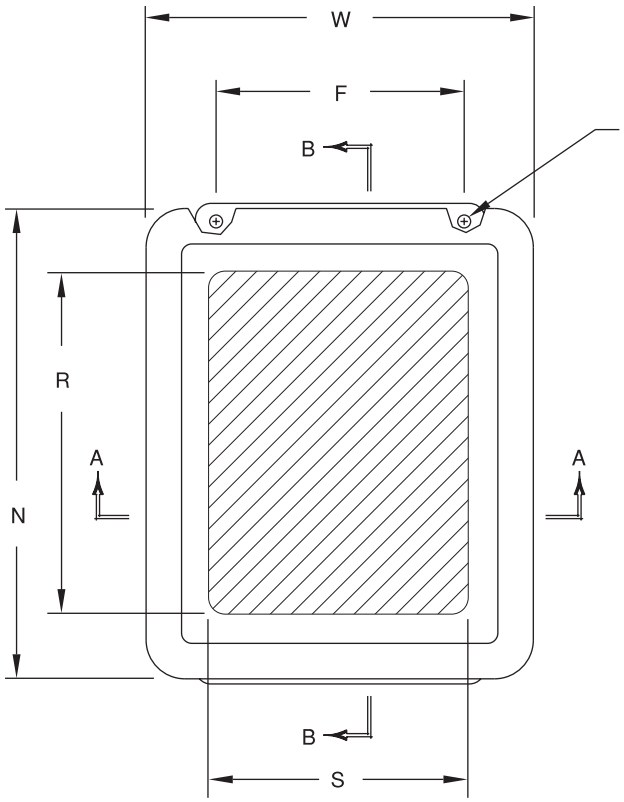
Aluminum	BP__AL	pg. 149 - 150
Fiberglass	BP__FG	pg. 149 - 150
Stainless Steel	BP__SS	pg. 149 - 150
Painted Carbon Steel	BP__CS	pg. 149 - 150

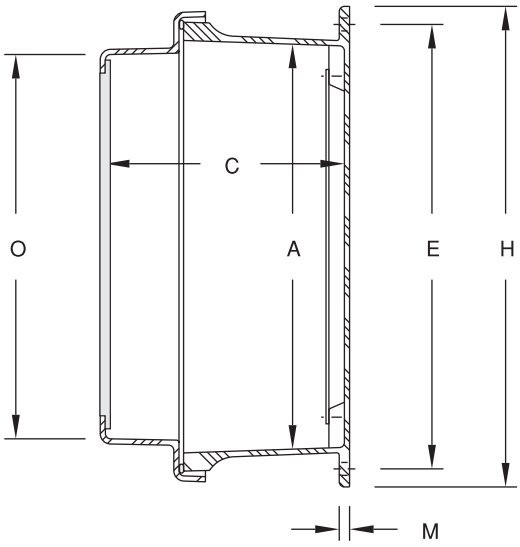
Accessories

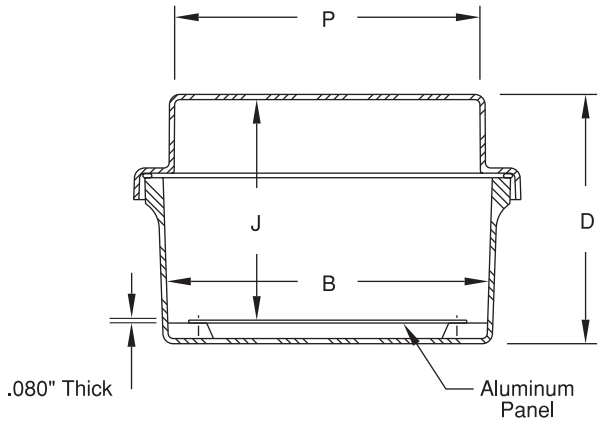
Drain & Breather Vents	pg. 144, 146
Hole Plugs	pg. 145
Assorted Hubs and Cord Grips	pg. 145, 148
All Other Accessories	pg. 144 - 159

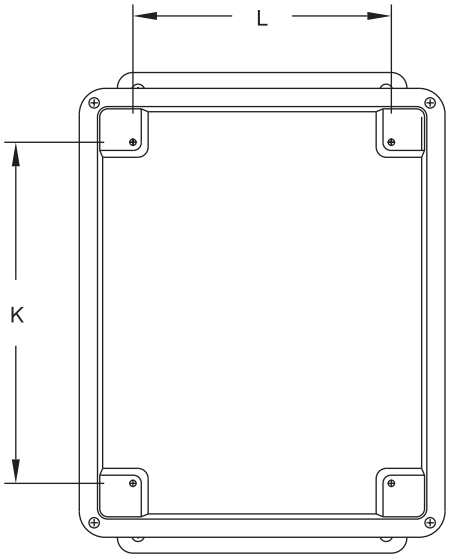
HPL Modifications

Custom Colors	pg. 12 - 13
Silk Screening	pg. 12 - 13
EMI/RFI Shielding	pg. 12 - 13
Custom Window	pg. 12 - 13
Custom Cutouts/Holes	pg. 12 - 13









FRONT VIEW
WITHOUT COVER

RJW Series Flush Bonded Window Enclosures

SIZE ID NUMBER	OVERALL H X W X D	INSIDE A X B X C	WINDOW AREA (MAXIMUM) R X S	MOUNTING E X F	J	K	L	M	N	O	P	HOLE DIA.	ENCLOSURE WEIGHT	PANEL NUMBER
RJW604HPL	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)	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 5.95 (196 x 146 x 151)	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*
RJW808HPL	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)	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*
RJW1008HPL RJW1008HLL	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)	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 6.32 (299 x 249 x 161)	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*
RJW1212HPL RJW1212HLL	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)	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*
RJW1412HPL RJW1412HLL	15.50 x 13.38 x 7.69 (394 x 340 x 195)	13.50 x 11.52 x 7.45 (343 x 293 x 189)	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 7.45 (396 x 344 x 189)	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 17.48 x 10.63 (499 x 444 x 270)	17.69 x 15.69 x 10.31 (449 x 399 x 262)	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 10.33 (501 x 399 x 262)	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 ordered separately.

Technical Specifications - JCC Series

Clear Cover "W" configuration - 4 cover 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
Mounting Feet	Integrally Molded
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

W Industry Standards

UL/cUL 50	File E64358 Type 1, 3R, 4X, 6P, 12
NEMA 250	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)
Cover Temperature Range	(-30°F to +248°F) (-34°C to +120°C)
Flammability Rating	UL94-5V
Cover Flammability	UL94V-0
Self Extinguishing	Non-halogenated, non-flame propagating
Chemical Resistance	Full chemical resistance charts listed in appendix
NFPA No. 101 Flame Spread	Class A (1)

W Accessories

Back Panels

Aluminum	BP__AL	pg. 149 - 150
Fiberglass	BP__FG	pg. 149 - 150
Stainless Steel	BP__SS	pg. 149 - 150
Painted Carbon Steel	BP__CS	pg. 149 - 150

Accessories

Drain & Breather Vents	pg. 144, 146
Hole Plugs	pg. 145
Assorted Hubs and Cord Grips	pg. 145, 148
All Other Accessories	pg. 144 - 159

W Modifications

Custom Colors	pg. 12 - 13
Silk Screening	pg. 12 - 13
EMI/RFI Shielding	pg. 12 - 13
Custom Cutouts/Holes	pg. 12 - 13

NOTES:

HW Technical Specifications - JCC Series

"HW" configuration - Hinged, 2 cover screws

NOTES:

HW 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
Mounting Feet	Integrally Molded
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

HW Industry Standards

UL/cUL 50	File E64358 Type 1, 3R, 4X, 6P, 12
NEMA 250	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)
Cover Temperature Range	(-30°F to +248°F) (-34°C to +120°C)
Flammability Rating	UL94-5V
Cover Flammability	UL94V-0
Self Extinguishing	Non-halogenated, non-flame propagating
Chemical Resistance	Full chemical resistance charts listed in appendix
NFPA No. 101 Flame Spread	Class A (1)

HW Accessories

Back Panels

Aluminum	BP__AL	pg. 149 - 150
Fiberglass	BP__FG	pg. 149 - 150
Stainless Steel	BP__SS	pg. 149 - 150
Painted Carbon Steel	BP__CS	pg. 149 - 150

Accessories

Drain & Breather Vents	pg. 144, 146
Hole Plugs	pg. 145
Assorted Hubs and Cord Grips	pg. 145, 148
All Other Accessories	pg. 144 - 159

HW Modifications

Custom Colors	pg. 12 - 13
Silk Screening	pg. 12 - 13
EMI/RFI Shielding	pg. 12 - 13
Custom Cutouts/Holes	pg. 12 - 13

Technical Specifications - JCC Series

Clear Cover "HLL" configuration - Hinged, Twist latch

NOTES:

HLL 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
Mounting Feet	Integrally Molded
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

HLL Industry Standards

UL/cUL 50	File E64358 Type 1, 3R, 4X, 6P, 12
NEMA 250	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)
Cover Temperature Range	(-30°F to +248°F) (-34°C to +120°C)
Flammability Rating	UL94-5V
Cover Flammability	UL94V-0
Self Extinguishing	Non-halogenated, non-flame propagating
Chemical Resistance	Full chemical resistance charts listed in appendix
NFPA No. 101 Flame Spread	Class A (1)

HLL Accessories

Back Panels

Aluminum	BP__AL	pg. 149 - 150
Fiberglass	BP__FG	pg. 149 - 150
Stainless Steel	BP__SS	pg. 149 - 150
Painted Carbon Steel	BP__CS	pg. 149 - 150

Accessories

Drain & Breather Vents	pg. 144, 146
Hole Plugs	pg. 145
Assorted Hubs and Cord Grips	pg. 145, 148
All Other Accessories	pg. 144 - 159

HLL Modifications

Custom Colors	pg. 12 - 13
Silk Screening	pg. 12 - 13
EMI/RFI Shielding	pg. 12 - 13
Custom Cutouts/Holes	pg. 12 - 13

Technical Specifications - JCC Series

Clear Cover "HPL" configuration - Hinged, pull latch

NOTES:

HPL 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
Mounting Feet	Integrally Molded
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

HPL Industry Standards

UL/cUL 50	File E64358 Type 1, 3R, 4X, 6P, 12
NEMA 250	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)
Cover Temperature Range	(-30°F to +248°F) (-34°C to +120°C)
Flammability Rating	UL94-5V
Cover Flammability	UL94V-0
Self Extinguishing	Non-halogenated, non-flame propagating
Chemical Resistance	Full chemical resistance charts listed in appendix
NFPA No. 101 Flame Spread	Class A (1)

HPL Accessories

Back Panels

Aluminum	BP__AL	pg. 149 - 150
Fiberglass	BP__FG	pg. 149 - 150
Stainless Steel	BP__SS	pg. 149 - 150
Painted Carbon Steel	BP__CS	pg. 149 - 150

Accessories

Drain & Breather Vents	pg. 144, 146
Hole Plugs	pg. 145
Assorted Hubs and Cord Grips	pg. 145, 148
All Other Accessories	pg. 144 - 159

HPL Modifications

Custom Colors	pg. 12 - 13
Silk Screening	pg. 12 - 13
EMI/RFI Shielding	pg. 12 - 13
Custom Cutouts/Holes	pg. 12 - 13

Technical Specifications - JCC Series

Clear Cover "FHW" configuration - Fiberglass hinged, 4 cover screws

FHW 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
Mounting Feet	Integrally Molded
Hinge Material	Glass filled Polybutylene Terephthalate (PBT)
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

FHW Industry Standards

UL/cUL 50	File E64358 Type 1, 3R, 4X, 6P, 12
NEMA 250	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)
Cover Temperature Range	(-30°F to +248°F) (-34°C to +120°C)
Flammability Rating	UL94-5V
Cover Flammability	UL94V-0
Self Extinguishing	Non-halogenated, non-flame propagating
Chemical Resistance	Full chemical resistance charts listed in appendix
NFPA No. 101 Flame Spread	Class A (1)

FHW Accessories

Back Panels

Aluminum	BP__AL	pg. 149 - 150
Fiberglass	BP__FG	pg. 149 - 150
Stainless Steel	BP__SS	pg. 149 - 150
Painted Carbon Steel	BP__CS	pg. 149 - 150

Accessories

Drain & Breather Vents	pg. 144, 146
Hole Plugs	pg. 145
Assorted Hubs and Cord Grips	pg. 145, 148
All Other Accessories	pg. 144 - 159

FHW Modifications

Custom Colors	pg. 12 - 13
Silk Screening	pg. 12 - 13
EMI/RFI Shielding	pg. 12 - 13
Custom Cutouts/Holes	pg. 12 - 13

NOTES:

Technical Specifications - JCC Series

Clear Cover "FHLL" configuration - Fiberglass hinged, link lock latch

NOTES:

FHLL 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
Mounting Feet	Integrally Molded
Hinge Material	Glass filled Polybutylene Terephthalate (PBT)
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

FHLL Industry Standards

UL/cUL 50	File E64358 Type 1
NEMA 250	Type 1
CSA Std C22.2	File LR069014 Type 1
Temperature Range	(-76°F to +274°F) (-60°C to +134°C)
Cover Temperature Range	(-30°F to +248°F) (-34°C to +120°C)
Flammability Rating	UL94-5V
Cover Flammability	UL94V-0
Self Extinguishing	Non-halogenated, non-flame propagating
Chemical Resistance	Full chemical resistance charts listed in appendix
NFPA No. 101 Flame Spread	Class A (1)

FHLL Accessories

Back Panels

Aluminum	BP__AL	pg. 149 - 150
Fiberglass	BP__FG	pg. 149 - 150
Stainless Steel	BP__SS	pg. 149 - 150
Painted Carbon Steel	BP__CS	pg. 149 - 150

Accessories

Drain & Breather Vents	pg. 144, 146
Hole Plugs	pg. 145
Assorted Hubs and Cord Grips	pg. 145, 148
All Other Accessories	pg. 144 - 159

FHLL Modifications

Custom Colors	pg. 12 - 13
Silk Screening	pg. 12 - 13
EMI/RFI Shielding	pg. 12 - 13
Custom Cutouts/Holes	pg. 12 - 13

Technical Specifications - JCC Series

FHPL

Clear Cover "FHPL" configuration - Fiberglass hinged, padlock latch

NOTES:

FHPL 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
Mounting Feet	Integrally Molded
Hinge Material	Glass filled Polybutylene Terephthalate (PBT)
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

FHPL Industry Standards

UL/cUL 50	File E64358 Type 1
NEMA 250	Type 1
CSA Std C22.2	File LR069014 Type 1
Temperature Range	(-76°F to +274°F) (-60°C to +134°C)
Cover Temperature Range	(-30°F to +248°F) (-34°C to +120°C)
Flammability Rating	UL94-5V
Cover Flammability	UL94V-0
Self Extinguishing	Non-halogenated, non-flame propagating
Chemical Resistance	Full chemical resistance charts listed in appendix
NFPA No. 101 Flame Spread	Class A (1)

FHPL Accessories

Back Panels

Aluminum	BP__AL	pg. 149 - 150
Fiberglass	BP__FG	pg. 149 - 150
Stainless Steel	BP__SS	pg. 149 - 150
Painted Carbon Steel	BP__CS	pg. 149 - 150

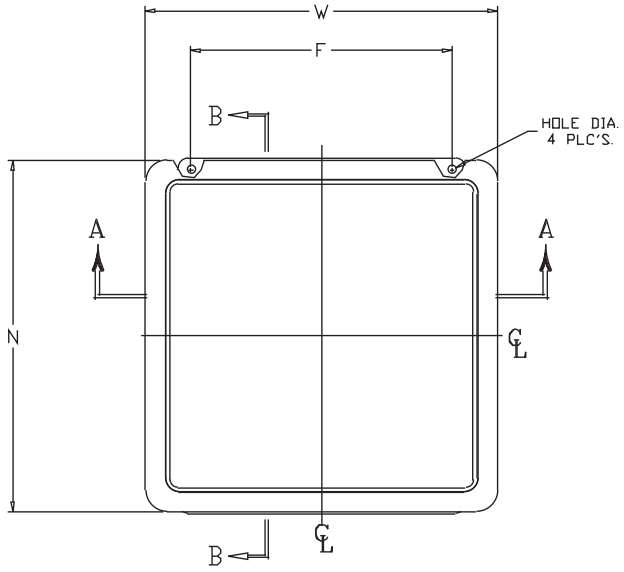
Accessories

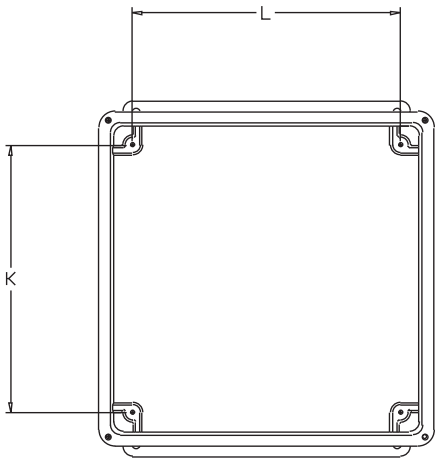
Drain & Breather Vents	pg. 144, 146
Hole Plugs	pg. 145
Assorted Hubs and Cord Grips	pg. 145, 148
All Other Accessories	pg. 144 - 159

FHPL Modifications

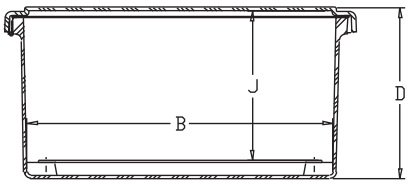
Custom Colors	pg. 12 - 13
Silk Screening	pg. 12 - 13
EMI/RFI Shielding	pg. 12 - 13
Custom Cutouts/Holes	pg. 12 - 13

JCC Series Technical Drawings

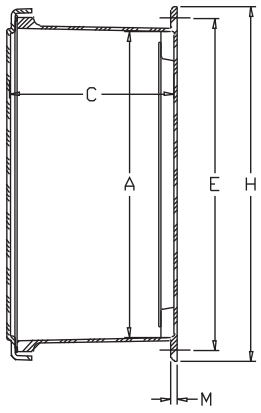




FRONT VIEW WITHOUT COVER



SECTION A–A



SECTION B–B

JCC Series Clear Cover Enclosures

SIZE ID NUMBER	OVERALL H X W X D	INSIDE A X B X C	MOUNTING E X F	J	K	L	M	N	HOLE DIA.	SHIPPING WEIGHT	PANEL NUMBER
JCC808W JCC808HW JCC808HLL JCC808HPL JCC808FHW JCC808FHLL JCC808FHPL	9.56 x 9.47 x 5.09 (243 x 241 x 129)	7.73 x 7.73 x 4.82 (196 x 196 x 123)	8.75 x 6.00 (222 x 152)	4.24 (108)	6.25 (159)	6.25 (159)	0.25 (6)	9.47 (241)	0.31 (8)	3.80 lbs.	BP88*
JCC1212W JCC1212HW JCC1212HLL JCC1212HPL JCC1212FHW JCC1212FHLL JCC1212FHPL	13.56 x 13.47 x 6.56 (344 x 342 x 167)	11.70 x 11.70 x 6.29 (297 x 297 x 160)	12.75 x 10.00 (324 x 254)	5.71 (145)	10.25 (260)	10.25 (260)	0.25 (6)	13.47 (342)	0.31 (8)	6.80 lbs.	BP1212*

All measures are in inches, items in parentheses are in millimeters.
* Panel ordered separately.

Industry's unique requirement for extra deep enclosure without significantly increasing the length 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 DIN facings or multiple contact pushbuttons are met with ample depth from the cover or with substantial height for panel mounted components.

Fatboy Series 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

SSH Industry Standards

UL/cUL 50	File E64358 Type 1, 3R, 4X, 12
NEMA 250	Type 1, 3R, 4X, 12
CSA Std C22.2	File LR069014 Type 1, 3R, 4X, 12
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
Window Flammability	UL94-HB
Self extinguishing	Non-halogenated, non-flame propagating
Chemical Resistance	Full chemical resistance charts listed in appendix
NFPA No. 101 Flame Spread	Class A (1)

Technical Specifications - Fatboy Series

Opaque Cover "SSH" configuration - Hinged, padlock latch

NOTES:

SSH Construction

Material	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
Soft Edge Design	Rounded edges, minimal protrusions or exposed pocket areas for assembly of dust and debris

SSH Industry Standards

UL/cUL 50	File E64358 Type 1, 3R, 4X, 12
NEMA 250	Type 1, 3R, 4X, 12
CSA Std C22.2	File LR069014 Type 1, 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)

SSH Accessories

Back Panels

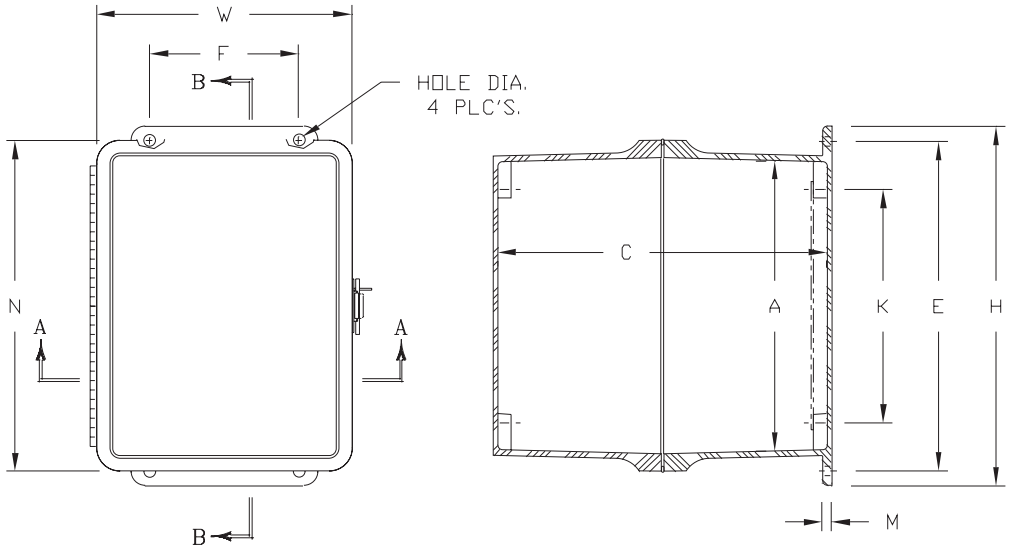
Aluminum	BP__AL	pg. 149 - 150
Fiberglass	BP__FG	pg. 149 - 150
Stainless Steel	BP__SS	pg. 149 - 150
Painted Carbon Steel	BP__CS	pg. 149 - 150

Accessories

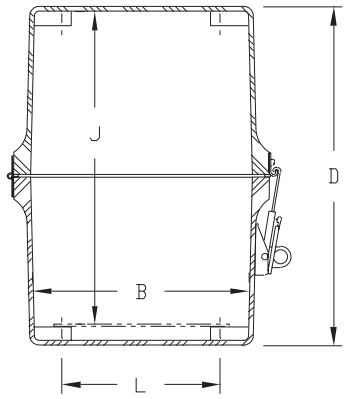
Drain & Breather Vents	pg. 144, 146
Hole Plugs	pg. 145
Assorted Hubs and Cord Grips	pg. 145, 148
All Other Accessories	pg. 144 - 159

SSH Modifications

Custom Colors	pg. 12 - 13
Silk Screening	pg. 12 - 13
EMI/RFI Shielding	pg. 12 - 13
Custom Window	pg. 12 - 13
Custom Cutouts/Holes	pg. 12 - 13



SECTION B–B



SECTION A–A

Extra Deep Enclosures with Opaque Covers - Fatboy Configuration Dimensions

SIZE ID NUMBER	OVERALL H X W X D	INSIDE A X B X C	MOUNTING E X F	J	K	L	M	N	HOLE DIA.	SHIPPING 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: Metic units are for reference; do not convert.
* Panel sold separately

Technical Specifications - Fatboy Series

Flush Bonded Window "SSH" configuration - Hinged, padlock latch

NOTES:

SSH Construction

Material	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
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

SSH Industry Standards

UL/cUL 50	File E64358 Type 1, 3R, 4X, 12
NEMA 250	Type 1, 3R, 4X, 12
CSA Std C22.2	File LR069014 Type 1, 3R, 4X, 12
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
Window Flammability	UL94-HB
Self Extinguishing	Non-halogenated, non-flame propagating
Chemical Resistance	Full chemical resistance charts listed in appendix
NFPA No. 101 Flame Spread	Class A (1)

SSH Accessories

Back Panels

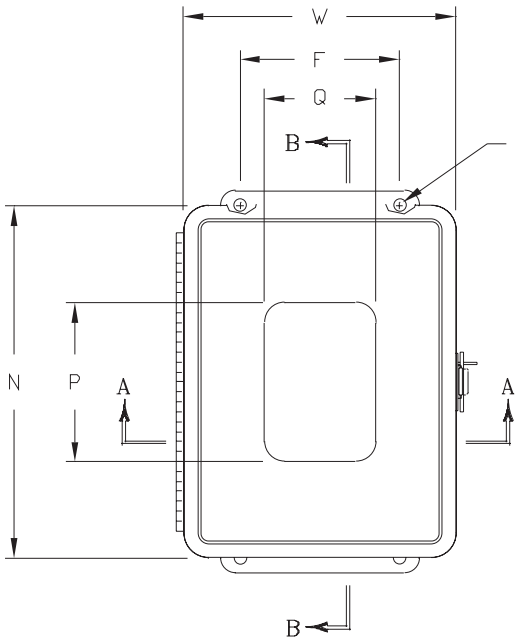
Aluminum	BP__AL	pg. 149 - 150
Fiberglass	BP__FG	pg. 149 - 150
Stainless Steel	BP__SS	pg. 149 - 150
Painted Carbon Steel	BP__CS	pg. 149 - 150

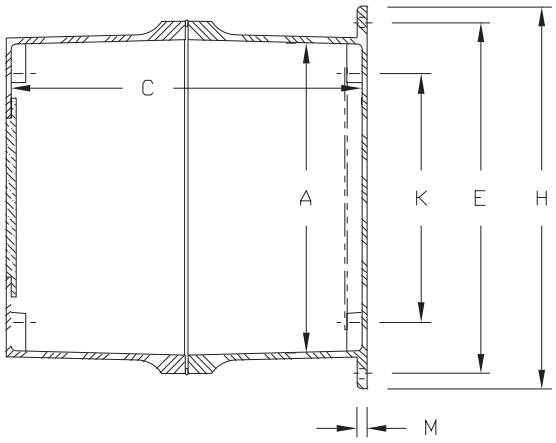
Accessories

Drain & Breather Vents	pg. 144, 146
Hole Plugs	pg. 145
Assorted Hubs and Cord Grips	pg. 145, 148
All Other Accessories	pg. 144 - 159

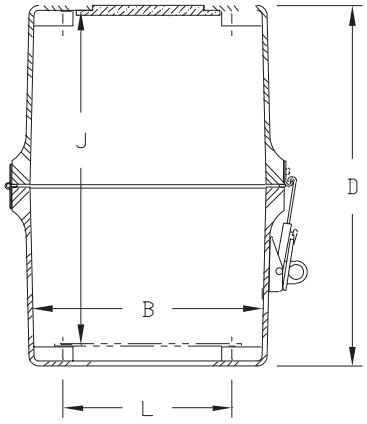
SSH Modifications

Custom Colors	pg. 12 - 13
Silk Screening	pg. 12 - 13
EMI/RFI Shielding	pg. 12 - 13
Custom Window	pg. 12 - 13
Custom Cutouts/Holes	pg. 12 - 13





SECTION B–B



SECTION A–A

Extra Deep Enclosures with Windows - Fatboy Configuration Dimensions

SIZE ID 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.	SHIPPING WEIGHT	PANEL NUMBER
JW8088SSH	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)	4.25 x 4.25 (108 x 108)	.31 (8)	5.8 lbs.	BP88*
JW10088SSH	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)	6.25 x 4.25 (159 x 108)	.31 (8)	6.5 lbs.	BP108*
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)	8.25 x 6.25 (209 x159)	.31 (8)	9.1 lbs.	BP1210*
JW121212SSH	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)	8.25 x 8.25 (209 x 209)	.31 (8)	12.1 lbs.	BP1212*
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)	10.25 x 8.25 (260 x 209)	.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)	14.25 x 12.25 (362 x 311)	.31 (8)	26.4 lbs.	BP1816*
JW201617SSH	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)	16.25 x 12.25 (413 x 311)	.31 (8)	28.5 lbs.	BPJ2016*

Caution: Metic units are for reference; do not convert.
* Panel sold separately

Technical Specifications - The TeleControl Series

TC Construction

Material	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 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

TC Industry Standards

UL/cUL 50	File E64358 Type 1, 3R, 4X, 6P, 12
NEMA 250	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
Window Flammability	UL94V-HB
Self Extinguishing	Non-halogenated, non-flame propagating
Chemical Resistance	Full chemical resistance charts listed in appendix
NFPA No. 101 Flame Spread	Class A (1)

TC Accessories

Back Panels

Aluminum	BP__AL	pg. 149 - 150
Fiberglass	BP__FG	pg. 149 - 150
Stainless Steel	BP__SS	pg. 149 - 150
Painted Carbon Steel	BP__CS	pg. 149 - 150

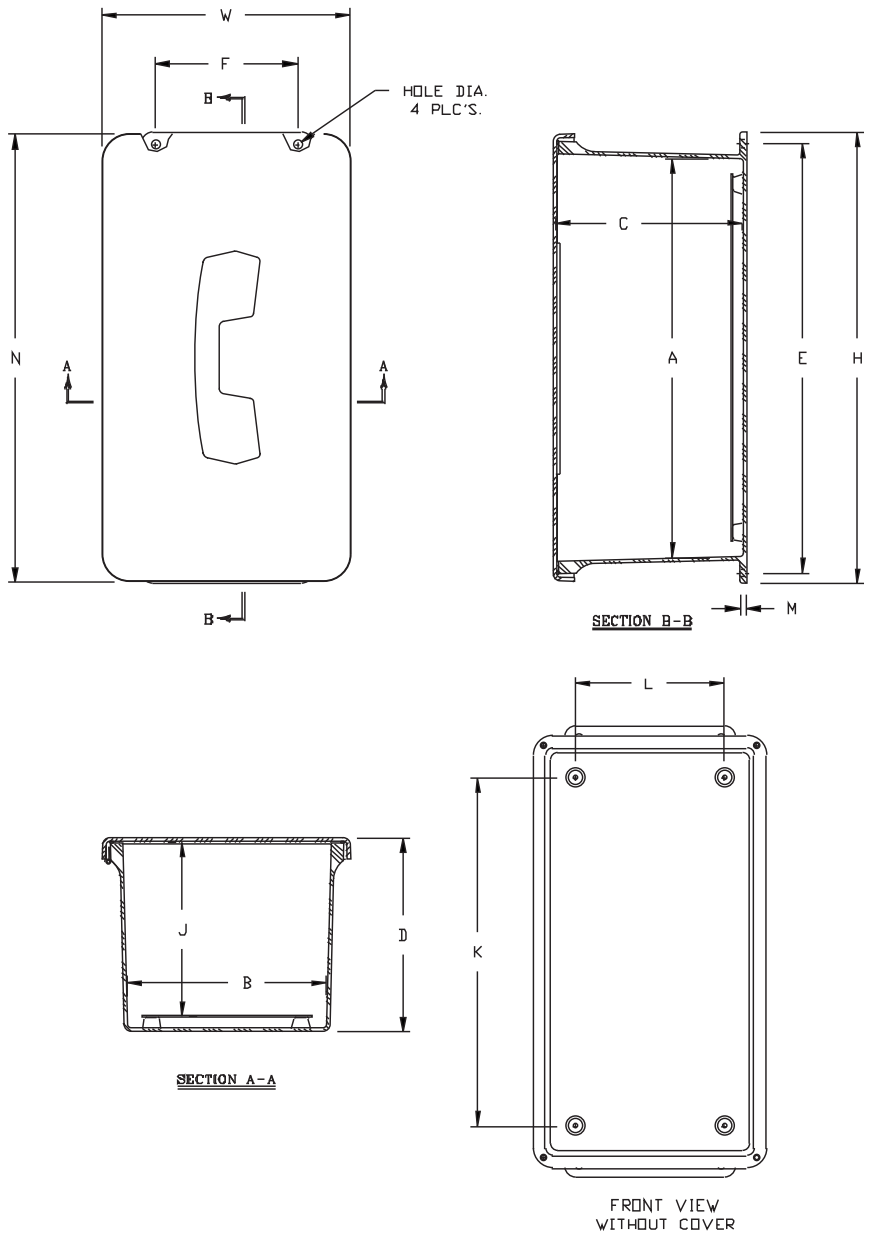
Accessories

Drain & Breather Vents	pg. 144, 146
Hole Plugs	pg. 145
Assorted Hubs and Cord Grips	pg. 145, 148
All Other Accessories	pg. 144 - 159

TC Modifications

Custom Colors	pg. 12 - 13
Silk Screening	pg. 12 - 13
EMI/RFI Shielding	pg. 12 - 13
Custom Window	pg. 12 - 13
Custom Cutouts/Holes	pg. 12 - 13

NOTES:



TeleControl Enclosures Dimensions

SIZE ID NUMBER	OVERALL H X W X D	INSIDE A X B X C	MOUNTING E X F	J	K	L	M	N	HOLE DIA.	SHIPPING 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)	6.11 (155)	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 ordered separately.

The PolyStar Series PC

PolyStar™ 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 UL 50 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.

PolyStar™ enclosures are manufactured with polycarbonate designed to perform in cold weather applications. In general, the product performance will not be adversely affected until temperatures below -40°F are realized. In our literature, we document a normal operating temperature of -20°F to +240°F (-20°C to +115°C). We do this to provide a safe operating range, as product application and enclosure placement are not always exactly known.

PolyStar Series Attributes

- Latches and hinges do not penetrate enclosure
- Easy to remove lid
- High performance inserts
- Integrated lock hasp
- Flush-fit side mount swing panel and DIN rail system
- Molded in bosses
- Multi-directional mounting feet
- Available in standard flat covers or domed covers as applicable on certain sizes

PolyStar Series Industry Standards

UL/cUL 50	File E342926 Type 3R, 4, 4X, 12
NEMA 250	Type 3R, 4, 4X, 12
IEC 60529	IP66
Temperature Range	(-20°F to +240°F) (-20°C to +115°C)
Flammability Rating	UL94-5VA/V0
Chemical Resistance	Full chemical resistance charts listed in appendix

Technical Specifications - PolyStar™ Series

Opaque Cover configuration - Hinged, 2 latches

PC Construction

Material	Polycarbonate with UV inhibitors
Gasket	Neoprene rope style
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 threaded brass inserts accepting 10-32 screws
Side Mount Solutions	Variable height, any side mount capability

PC Industry Standards

UL/cUL 50	File E342926 Type 3R, 4, 4X, 12
NEMA 250	Type 3R, 4, 4X, 12
IEC 60529	IP66
Temperature Range	(-20°F to +240°F) (-20°C to +115°C)
Flammability Rating	UL94-5VA/V0
Chemical Resistance	Full chemical resistance charts listed in appendix

NOTES:

PC Accessories

Back Panels

Aluminum	BP__AL	pg. 149 - 150
Fiberglass	BP__FG	pg. 149 - 150
Stainless Steel	BP__SS	pg. 149 - 150
Carbon Steel	BP__CS	pg. 149 - 150

Swing Panel Kits *(comes with mounts, screws, and panel)*

Swing Panel Kit	PC_SPK	pg. 113

Accessories

Slot Nut Kit (includes two nuts & two screws)	PCSNK	pg. 113
Swing Panel Mounts (4 per kit)	PCSPMK	pg. 113
Latch Kit (2 latches per kit) - replacement only	PCLATCHKIT	pg. 113
Accessory Kit (includes all screws, inserts, and mounting feet) - replacement only	PCACCESSORYKIT	pg. 113

PC Modifications

Custom Colors	pg. 12 - 13
Silk Screening	pg. 12 - 13
EMI/RFI Shielding	pg. 12 - 13
Custom Window	pg. 12 - 13
Custom Cutouts/Holes	pg. 12 - 13

CC Technical Specifications - PolyStar™ Series

Clear Cover configuration - Hinged, 2 latches

CC Construction

Material	Polycarbonate with UV inhibitors
Gasket	Neoprene rope style
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 threaded brass inserts accepting 10-32 screws
Side Mount Solutions	Variable height, any side mount capability

CC Industry Standards

UL/cUL 50	File E342926 Type 3R, 4, 4X, 12
NEMA 250	Type 3R, 4, 4X, 12
IEC 60529	IP66
Temperature Range	(-20°F to +240°F) (-20°C to +115°C)
Flammability Rating	UL94-5VA/V0
Chemical Resistance	Full chemical resistance charts listed in appendix

NOTES:

CC Accessories

Back Panels

Aluminum	BP__AL	pg. 149 - 150
Fiberglass	BP__FG	pg. 149 - 150
Stainless Steel	BP__SS	pg. 149 - 150
Carbon Steel	BP__CS	pg. 149 - 150

Swing Panel Kits *(comes with mounts, screws, and panel)*

Swing Panel Kit	PC_SPK	pg. 113

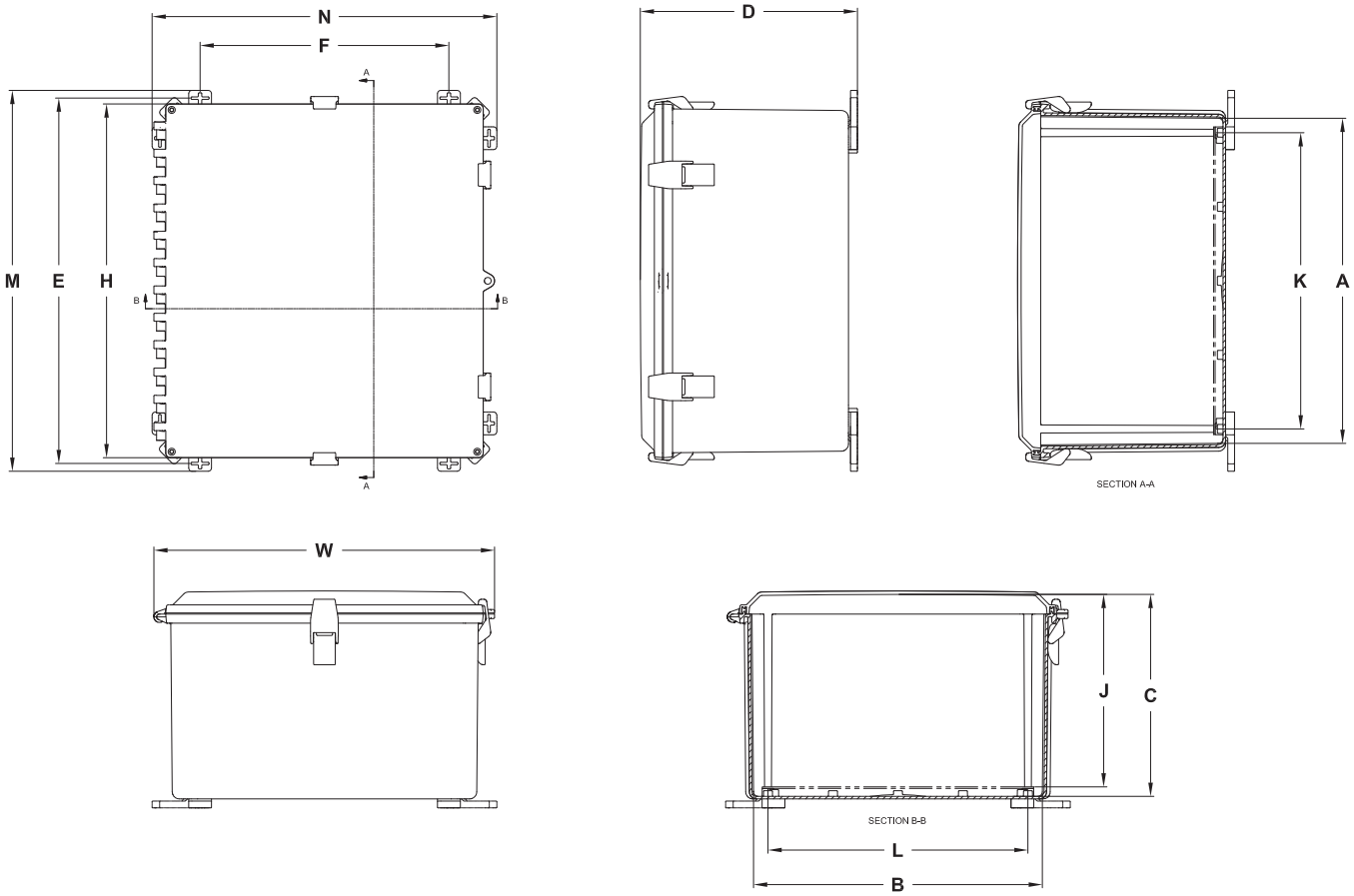
Accessories

Slot Nut Kit (includes two nuts & two screws)	PCSNK	pg. 113
Swing Panel Mounts (4 per kit)	PCSPMK	pg. 113
Latch Kit (2 latches per kit) - replacement only	PCLATCHKIT	pg. 113
Accessory Kit (includes all screws, inserts, and mounting feet) - replacement only	PCACCESSORYKIT	pg. 113

CC Modifications

Custom Colors	pg. 12 - 13
Silk Screening	pg. 12 - 13
EMI/RFI Shielding	pg. 12 - 13
Custom Window	pg. 12 - 13
Custom Cutouts/Holes	pg. 12 - 13

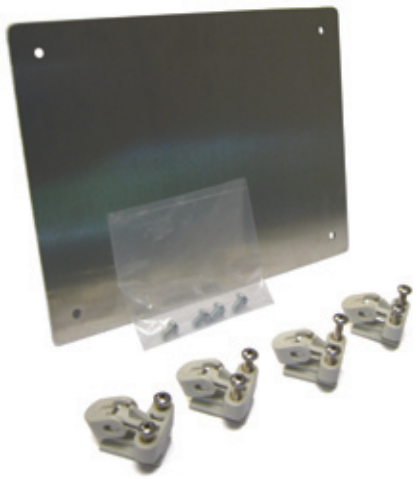
PolyStar™ Series Opaque Cover and Clear Cover Configuration Technical Drawings



PolyStar Series Enclosures - Opaque Cover and Clear Cover Configuration Dimensions

SIZE ID 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	SHIPPING 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*
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*
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*

All measures are in inches, items in parentheses are in millimeters.
* Panel sold separately
** Domed covers available upon request, consult factory for details



Swing Panel Kits

CATALOG NUMBER	SIZE	DESCRIPTION
PC606SPK	6 x 6	PolySTAR Series 6x6 Swing Panel Kit (includes mounts, screws and panel)
PC806SPK	8 x 6	PolySTAR Series 8x6 Swing Panel Kit (includes mounts, screws and panel)
PC1008SPK	10 x 8	PolySTAR Series 10x8 Swing Panel Kit (includes mounts, screws and panel)
PC1210SPK	12 x 10	PolySTAR Series 12x10 Swing Panel Kit (includes mounts, screws and panel)
PC1412SPK	14 x 12	PolySTAR Series 14x12 Swing Panel Kit (includes mounts, screws and panel)
PC1614SPK	16 x 14	PolySTAR Series 16x14 Swing Panel Kit (includes mounts, screws and panel)
PC1816SPK	18 x 16	PolySTAR Series 18x16 Swing Panel Kit (includes mounts, screws and panel)

PCSNK

Accessories

CATALOG NUMBER	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

PCSPMK

PCLATCHKIT

PCACCESSORYKIT

The DuraBoxx® Series

D

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.

DuraBoxx® Series Attributes

- 14 sizes available
- Size range from 3" x 3" to 24" x 16"
- 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

DuraBoxx® Industry Standards

UL/cUL 50/508	File E64358 Type 1, 3, 3S, 4X, 6, 6P, 12
NEMA 250	Type 1, 3, 3S, 4X, 6, 6P, 12
CSA Std C22.2	File LR069014 Type 1, 3, 3S, 4X, 6, 6P, 12
IEC 529	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

W

Technical Specifications - D Series

"W" configuration - Flush fitting cover fastened by captive lid screws.

NOTES:

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 10-32 screws
Soft Edge Design	Rounded edges, minimal protrusions or exposed pocket areas for assembly of dust and debris

W Industry Standards

UL/cUL 50/508	File E64358 Type 1, 3, 3S, 4X, 6, 6P, 12
NEMA 250	Type 1, 3, 3S, 4X, 6, 6P, 12
CSA Std C22.2	File LR069014 Type 1, 3, 3S, 4X, 6, 6P, 12
IEC 529	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

W Accessories

Back Panels

Carbon Steel	BP__CS	pg. 153

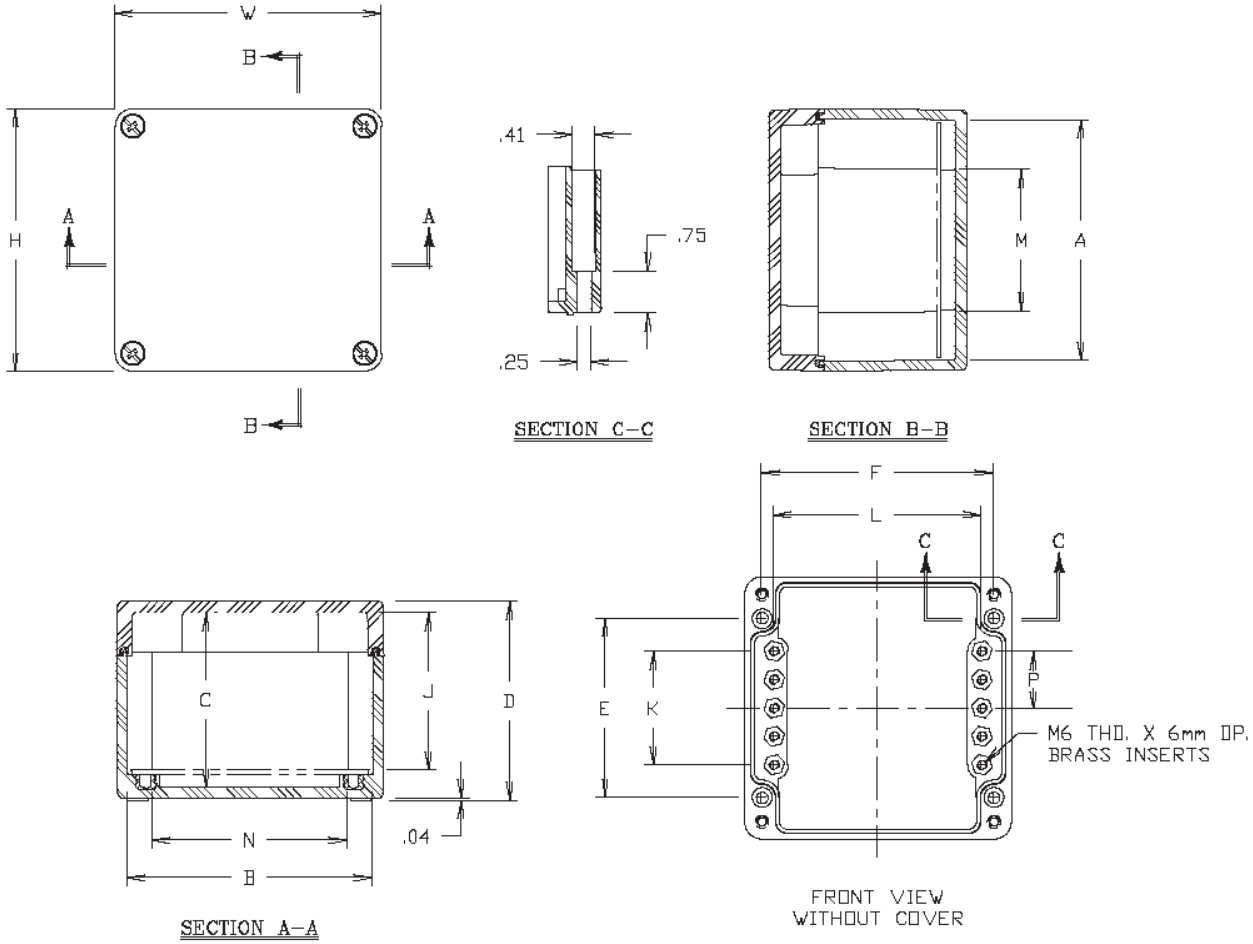
Accessories

Drain & Breather Vents	pg. 144, 146
Hole Plugs	pg. 145
Assorted Hubs and Cord Grips	pg. 145, 148
All Other Accessories	pg. 144 - 159

W Modifications

Custom Colors	pg. 12 - 13
Silk Screening	pg. 12 - 13
EMI/RFI Shielding	pg. 12 - 13
Custom Window	pg. 12 - 13
Custom Cutouts/Holes	pg. 12 - 13

D Series "W" Configuration Technical Drawings



DuraBoxx® D Series Enclosures

SIZE ID NUMBER	OVERALL H X W X D	INSIDE A X B X C	MOUNTING E X F	J	K	L	M	N	P	SHIPPING WEIGHT	PANEL NO.
D333W	2.95 x 3.15 x 2.78 (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 (27)	1.93 (49)	N/A	0.81 LB	D333BP*
D342W	2.95 x 4.33 x 2.22 (75 x 110 x 56)	2.56 x 3.93 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 (33)	3.37 (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 (65)	3.50 (89)	1.02 (26)	1.7 LB	D554BP*
D593W DCC593W	4.72 x 8.66 x 3.19 (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 (65)	7.37 (187)	1.02 (26)	2.4 LB	D000BP*
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 (65)	7.37 (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 (89)	4.68 (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 (89)	8.62 (219)	1.50 (38)	3.8 LB	D7114BP*
D10105W	9.84 x 10.04 x 4.76 (250 x 255 x 121)	9.31 x 9.51 x 4.29 (236 x 242 x 109)	7.87 x 9.25 (200 x 235)	4.11 (104)	3.94 (100)	8.94 (227)	7.03 (179)	8.41 (214)	1.97 (50)	6.4 LB	D10105BP*
D10165W	9.84 x 15.75 x 4.76 (250 x 400 x 121)	9.31 x 15.22 x 4.29 (236 x 387 x 109)	7.87 x 14.96 (200 x 380)	4.09 (104)	3.94 (100)	14.65 (327)	7.03 (179)	14.12 (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 (289)	12.56 (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 (334)	14.12 (359)	4.92 (125)	11.0 LB	D16165BP*

Duraboxx® Clear Cover Sizes: DCC Part Number
* Panel ordered separately

W

Technical Specifications - 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 10-32 screws
Soft Edge Design	Rounded edges, minimal protrusions or exposed pocket areas for assembly of dust and debris

W Industry Standards

UL/cUL 50/508	File E64358 Type 1, 3, 3S, 4X, 6, 6P, 12
NEMA 250	Type 1, 3, 3S, 4X, 6, 6P, 12
CSA Std C22.2	File LR069014 Type 1, 3, 3S, 4X, 6, 6P, 12
IEC 529	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

NOTES:

W Accessories

Back Panels

Carbon Steel	BP__CS	pg. 153

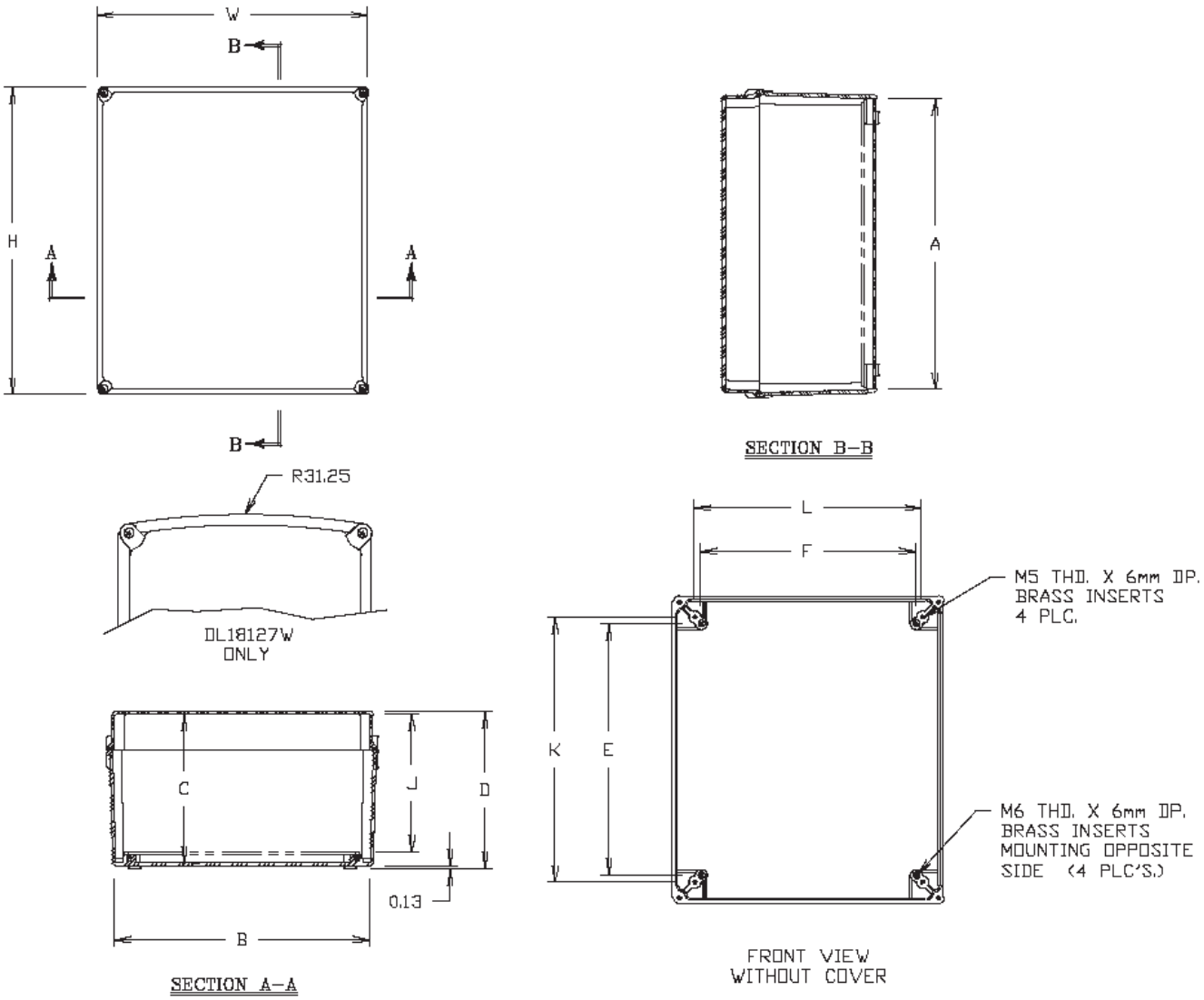
Accessories

Drain & Breather Vents	pg. 144, 146
Hole Plugs	pg. 145
Assorted Hubs and Cord Grips	pg. 145, 148
All Other Accessories	pg. 144 - 159

W Modifications

Custom Colors	pg. 12 - 13
Silk Screening	pg. 12 - 13
EMI/RFI Shielding	pg. 12 - 13
Custom Window	pg. 12 - 13
Custom Cutouts/Holes	pg. 12 - 13

DL Series "W" Configuration Technical Drawings



DuraBoxx® DL Series Enclosures

SIZE ID NUMBER	OVERALL H X W X D	INSIDE A X B X C	MOUNTING E X F	J	K	L	SHIPPING WEIGHT	PANEL NO.
DL18127W	16.54 x 10.63 x 7.22 (420 x 270 x 183)	15.02 x 9.12 x 6.85 (382 x 232 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 8.44 (420 x 370 x 214)	15.56 x 13.59 x 7.99 (395 x 345 x 207)	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 8.44 (600 x 420 x 214)	22.67 x 15.55 x 7.99 (576 x 395 x 207)	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 ordered separately

NewSentry® PVC Enclosures

PVC

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 fiberglass products 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 add-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.

NewSentry® Series Attributes

- Memory retaining continuous PVC gasket
- Threaded inserts and captive brass cover screws
- Corrosion resistant PVC material
- Integral mounting feet available on some models
- Available in ten classic sizes

New Sentry® Industry Standards

UL/cUL 514B Fittings,	File E190961
514C Boxes	Type 1, 2, 3, 4, 4X, 12, 13
NEMA 250	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


JB 6X6X6

Technical Specifications - NewSentry® Series

"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

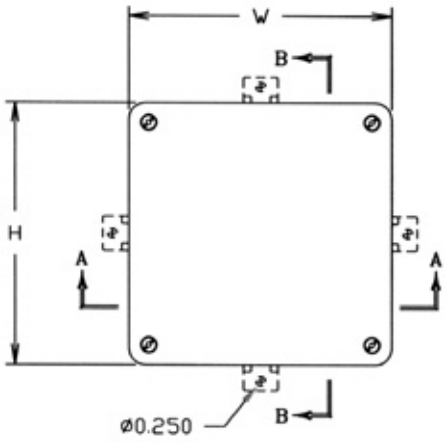
PVC Industry Standards

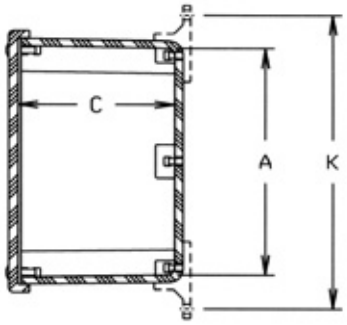
UL/cUL 514B Fittings	File E190961
514C Boxes	Type 1, 2, 3, 4, 4X, 12, 13
NEMA 250	Type 1, 2, 3, 4, 4X, 12, 13
CSA Std C22.2 No. 85	File 207025 Type 1, 2, 3, 4, 4X, 12, 13
Temperature Range	(-4°F to +140°F) (-20°C to +60°C)
Flammability Rating	UL94-V0
Self Extinguishing	Non-flame propagating
Chemical Resistance	Full chemical resistance charts listed in appendix

NOTES:

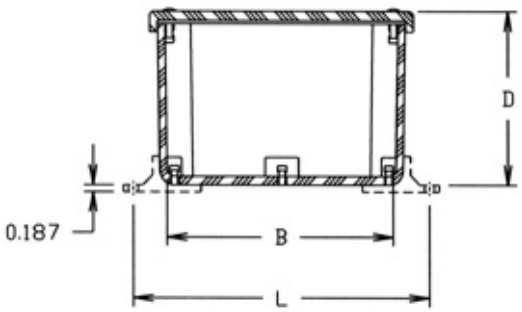
PVC Modifications

Silk Screening	pg. 12 - 13
Custom Cutouts/Holes	pg. 12 - 13





SECTION B–B



SECTION A–A

PVC NewSentry® Series Enclosures

SIZE ID NUMBER	OVERALL H X W X D	INSIDE A X B X C	K	L	F	SHIPPING 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.

* Denotes molded in mounting feet.

Control Enclosures

N

Stahlin's Control 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, or alternate 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 when used in oil field, mining, oil platform and general processing controls. Yet, the pleasing cosmetic construction is ideally suited for ordinary indoor or outdoor industrial control mounting.

Control Enclosures 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
- Wall mount or free standing configurations

Control Enclosures Industry Standards

UL/cUL 50	File E64358 Type 1, 3, 3R, 4X, 12 as designated
NEMA 250	Type 1, 3, 3R, 4X, 12 as designated
CSA Std C22.2	File LR069014 Type 1, 3, 3R, 4X, 12 as designated
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
Window flammability	UL94-HB
Self extinguishing	Non-halogenated, non-flame propagating
Chemical Resistance	Full chemical resistance charts listed in appendix
NFPA No. 101 Flame Spread	Class A (1)

Technical Specifications - Control Enclosures Type 4X

"HWT" configuration - Stainless steel hinged, latched down cover

NOTES:

HWT Construction

Material	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 10-32 screws
Soft Edge Design	Rounded edges, minimal protrusions or exposed pocket areas for assembly of dust and debris

HWT Industry Standards

UL/cUL 50	File E64358 Type 1, 3, 3R, 4X, 12
NEMA 250	Type 1, 3, 3R, 4X, 12
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)

HWT Accessories

Back Panels

Aluminum	BP__AL	pg. 149, 151
Fiberglass	BP__FG	pg. 149, 151
Stainless Steel	BP__SS	pg. 149, 151
Carbon Steel	BP__CS	pg. 149, 151

Accessories

Drain & Breather Vents	pg. 144, 146
Hole Plugs	pg. 145
Assorted Hubs and Cord Grips	pg. 145, 148
All Other Accessories	pg. 144 - 159

HWT Modifications

Custom Colors	pg. 12 - 13
Silk Screening	pg. 12 - 13
EMI/RFI Shielding	pg. 12 - 13
Custom Window	pg. 12 - 13
Custom Cutouts/Holes	pg. 12 - 13

Technical Specifications - Control Enclosures

"FHLWT" configuration - Fiberglass hinged, latched down cover

NOTES:

FHLWT Construction

Material	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 10-32 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)

FHLWT Industry Standards

UL/cUL 50	File E64358 Type 1, 3, 3R, 4X, 12
NEMA 250	Type 1, 3, 3R, 4X, 12
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)

FHLWT Accessories

Back Panels

Aluminum	BP__AL	pg. 149, 151
Fiberglass	BP__FG	pg. 149, 151
Stainless Steel	BP__SS	pg. 149, 151
Carbon Steel	BP__CS	pg. 149, 151

Accessories

Drain & Breather Vents	pg. 144, 146
Hole Plugs	pg. 145
Assorted Hubs and Cord Grips	pg. 145, 148
All Other Accessories	pg. 144 - 159

FHLWT Modifications

Custom Colors	pg. 12 - 13
Silk Screening	pg. 12 - 13
EMI/RFI Shielding	pg. 12 - 13
Custom Window	pg. 12 - 13
Custom Cutouts/Holes	pg. 12 - 13

WT Technical Specifications - Control Enclosures Type 4X

"WT" configuration - Latched down cover, lift off cover

NOTES:

WT Construction

Material	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 10-32 screws
Soft Edge Design	Rounded edges, minimal protrusions or exposed pocket areas for assembly of dust and debris

WT Industry Standards

UL/cUL 50	File E64358 Type 1, 3, 3R, 4X, 12
NEMA 250	Type 1, 3, 3R, 4X, 12
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)

WT Accessories

Back Panels

Aluminum	BP__AL	pg. 149, 151
Fiberglass	BP__FG	pg. 149, 151
Stainless Steel	BP__SS	pg. 149, 151
Carbon Steel	BP__CS	pg. 149, 151

Accessories

Drain & Breather Vents	pg. 144, 146
Hole Plugs	pg. 145
Assorted Hubs and Cord Grips	pg. 145, 148
All Other Accessories	pg. 144 - 159

WT Modifications

Custom Colors	pg. 12 - 13
Silk Screening	pg. 12 - 13
EMI/RFI Shielding	pg. 12 - 13
Custom Window	pg. 12 - 13
Custom Cutouts/Holes	pg. 12 - 13

RT Technical Specifications - Control Enclosures Type 3R

"RT" configuration - Hinged, latch down cover

NOTES:

RT Construction

Material	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
Soft Edge Design	Rounded edges, minimal protrusions or exposed pocket areas for assembly of dust and debris

RT Industry Standards

UL/cUL 50	File E64358 Type 1, 3R
NEMA 250	Type 1, 3R
CSA Std C22.2	File LR069014 Type 1, 3R
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)

RT Accessories

Back Panels

Aluminum	BP__AL	pg. 149, 151
Fiberglass	BP__FG	pg. 149, 151
Stainless Steel	BP__SS	pg. 149, 151
Carbon Steel	BP__CS	pg. 149, 151

Accessories

Drain & Breather Vents	pg. 144, 146
Hole Plugs	pg. 145
Assorted Hubs and Cord Grips	pg. 145, 148
All Other Accessories	pg. 144 - 159

RT Modifications

Custom Colors	pg. 12 - 13
Silk Screening	pg. 12 - 13
EMI/RFI Shielding	pg. 12 - 13
Custom Window	pg. 12 - 13
Custom Cutouts/Holes	pg. 12 - 13

Technical Specifications - Control Enclosures Type 3R

"FHLRT" configuration - Fiberglass hinged, through the door latches

NOTES:

FHLRT Construction

Material	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
Soft Edge Design	Rounded edges, minimal protrusions or exposed pocket areas for assembly of dust and debris
Hinge Material	Glass filled Polybutylene Terephthalate (PBT)

FHLRT Industry Standards

UL/cUL 50	File E64358 Type 1, 3R
NEMA 250	Type 1, 3R
CSA Std C22.2	File LR069014 Type 1, 3R
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)

FHLRT Accessories

Back Panels

Aluminum	BP__AL	pg. 149, 151
Fiberglass	BP__FG	pg. 149, 151
Stainless Steel	BP__SS	pg. 149, 151
Carbon Steel	BP__CS	pg. 149, 151

Accessories

Drain & Breather Vents	pg. 144, 146
Hole Plugs	pg. 145
Assorted Hubs and Cord Grips	pg. 145, 148
All Other Accessories	pg. 144 - 159

FHLRT Modifications

Custom Colors	pg. 12 - 13
Silk Screening	pg. 12 - 13
EMI/RFI Shielding	pg. 12 - 13
Custom Window	pg. 12 - 13
Custom Cutouts/Holes	pg. 12 - 13

Technical Specifications - Control Enclosures Type 12

"Type 12" configuration - Stainless steel hinged, latch down cover

NOTES:

Construction

Material	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
Soft Edge Design	Rounded edges, minimal protrusions or exposed pocket areas for assembly of dust and debris

Industry Standards

UL/cUL 50	File E64358 Type 1, 12
NEMA 250	Type 1, 12
CSA Std C22.2	File LR069014 Type 1, 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)

Accessories

Back Panels

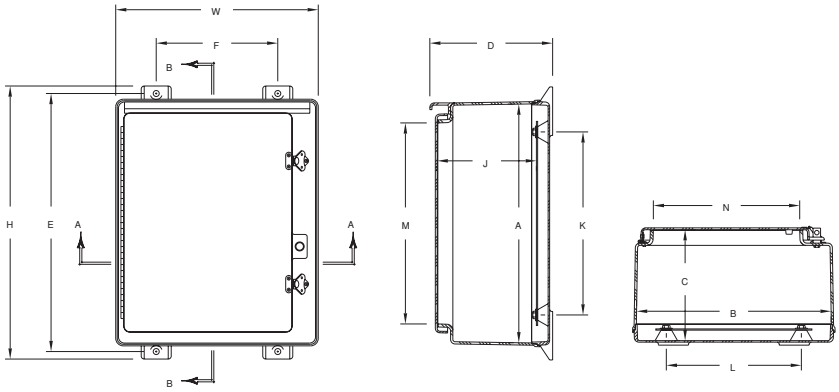
Aluminum	BP__AL	pg. 149, 151
Fiberglass	BP__FG	pg. 149, 151
Stainless Steel	BP__SS	pg. 149, 151
Carbon Steel	BP__CS	pg. 149, 151

Accessories

Drain & Breather Vents	pg. 144, 146
Hole Plugs	pg. 145
Assorted Hubs and Cord Grips	pg. 145, 148
All Other Accessories	pg. 144 - 159

Modifications

Custom Colors	pg. 12 - 13
Silk Screening	pg. 12 - 13
EMI/RFI Shielding	pg. 12 - 13
Custom Window	pg. 12 - 13
Custom Cutouts/Holes	pg. 12 - 13



Wall Mount Enclosures Dimensions

SIZE ID 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	SHIPPING 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**
N20208 HWT* 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	26 lbs.	BP2412**
N24126WT	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)	4	26 lbs.	BP2412**
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* N242010* 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)	8.25 (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 N242412FHLRT* 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 N30206FHLWT N30206RT N30206FHLRT N30206	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 2 5 5 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**

Wall Mount Enclosures Dimensions

SIZE ID 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	SHIPPING WEIGHT	PANEL NUMBER
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**
N30247HWT N30247FHLWT N30247WT N30247RT N30247	33.41 x 26.32 x 8.81 (849 x 668 x 224)	30.46 x 25.47 x 8.12 (774 x 647 x 206)	32.25 x 18.50 (819 x 470)	7.12 (181)	25.25 (641)	19.25 (489)	27.38 x 21.25 (695 x 540)	2 8 5 5 2	46.3 lbs.	BP3024**
N302410HWT N302410FHLWT N302410RT N302410FHLRT N302410	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)	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)	2 2 5 5 2	52.2 lbs.	BP3024**
N302412HWT N302412FHLWT N302412RT N302412FHLRT N302412	33.41 x 26.32 x 13.79 (849 x 668 x 350)	30.46 x 25.47 x 13.10 (774 x 647 x 333)	32.25 x 18.50 (819 x 470)	12.1 (307)	25.25 (641)	19.25 (489)	27.38 x 21.25 (695 x 540)	2 2 5 5 2	52 lbs.	BP3024**
N302414HWT N302414FHLWT N302414WT N302414RT N302414	33.41 x 26.32 x 15.79 (849 x 668 x 401)	30.46 x 25.47 x 15.10 (774 x 647 x 384)	32.25 x 18.50 (819 x 470)	14.1 (358)	25.25 (641)	19.25 (489)	27.38 x 21.25 (695 x 540)	2 8 5 5 2	56 lbs.	BP3024**
N302416HWT N302416FHLWT N302416RT N302416	33.41 x 26.32 x 17.79 (849 x 668 x 452)	30.46 x 25.47 x 17.10 (774 x 647 x 434)	32.25 x 18.50 (819 x 470)	16.1 (409)	25.25 (641)	19.25 (489)	27.38 x 21.25 (695 x 540)	2 5 5 2	56 lbs.	BP3024**
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**
N363020HWT*	39.31 x 32.50 x 22.08 (999 x 826 x 561)	36.31 x 31.69 x 21.39 (922 x 805 x 543)	38.13 x 23.88 (968 x 606)	20.39 (518)	31.25 (794)	25.25 (641)	33.25 x 27.25 (845 x 692)	5	78.5 lbs.	BP3630**
N363021HWT*	39.31 x 32.50 x 23.08 (999 x 826 x 586)	36.31 x 31.69 x 22.39 (922 x 805 x 569)	38.13 x 23.88 (968 x 606)	21.39 (543)	31.25 (794)	25.25 (641)	33.25 x 27.25 (845 x 692)	5	91 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* N363613FHLRT* 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 3	81 lbs.	BP3636**

*Available as made to order.
All measures are in inches, items in parentheses are in millimeters.
NOTE: Mounting hole dimension is .50 inches.
**Panel ordered separately.

Technical Specifications - NW Series - Bonded Window

HWT

"HWT" configuration - Stainless steel hinged, latched down cover

NOTES:

HWT Construction

Material	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 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

HWT Industry Standards

UL/cUL 50	File E64358 Type 1, 3, 3R, 4X, 12
NEMA 250	Type 1, 3, 3R, 4X, 12
CSA Std C22.2	File LR069014 Type 1, 3, 3R, 4X, 12
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
Window Flammability	UL94V-HB
Self Extinguishing	Non-halogenated, non-flame propagating
Chemical Resistance	Full chemical resistance charts listed in appendix

HWT Accessories

Back Panels

Aluminum	BP__AL	pg. 149, 151
Fiberglass	BP__FG	pg. 149, 151
Stainless Steel	BP__SS	pg. 149, 151
Carbon Steel	BP__CS	pg. 149, 151

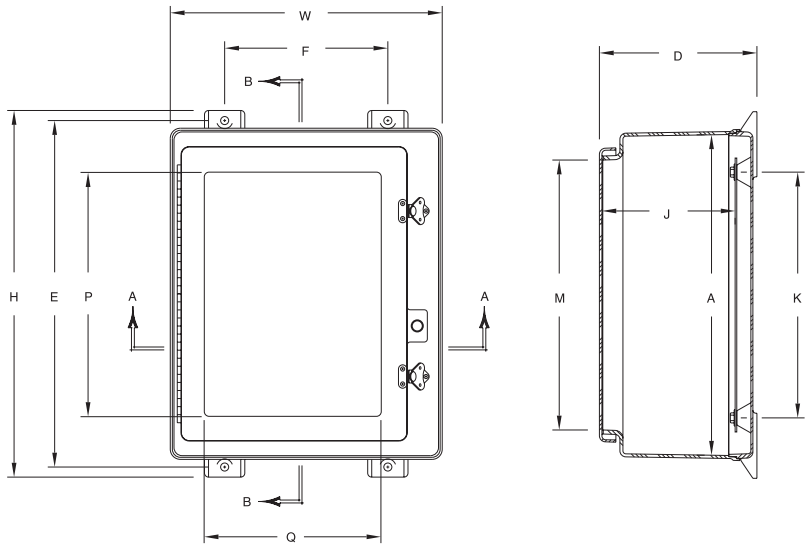
Accessories

Drain & Breather Vents	pg. 144, 146
Hole Plugs	pg. 145
Assorted Hubs and Cord Grips	pg. 145, 148
All Other Accessories	pg. 144 - 159

HWT Modifications

Custom Colors	pg. 12 - 13
Silk Screening	pg. 12 - 13
EMI/RFI Shielding	pg. 12 - 13
Custom Window	pg. 12 - 13
Custom Cutouts/Holes	pg. 12 - 13

Control Enclosures Type 4X - Bonded Window "HWT" Configuration Technical Chart & Drawing



Control Enclosures Type 4X - Bonded Window - "HWT" Dimensions

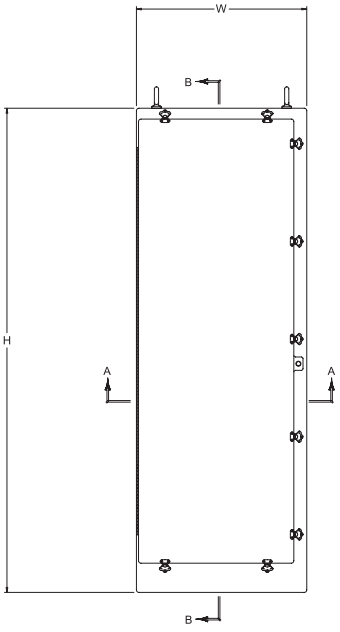
CATALOG NUMBER	OVERALL H X W X D	INSIDE A X B X C	WINDOW AREA (MAXIMUM) P X Q	MOUNTING E X F	J	K	L	ENCLOSURE OPENING M X N	NO. OF LATCHES	SHIPPING WEIGHT	PANEL NUMBER
NW201610HWT	22.75 x 16.87 x 11.77 (578 x 429 x 299)	19.70 x 16.04 x 11.24 (500 x 407 x 286)	14 x 10 (356 x 254)	21.50 x 10.12 (546 x 257)	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*

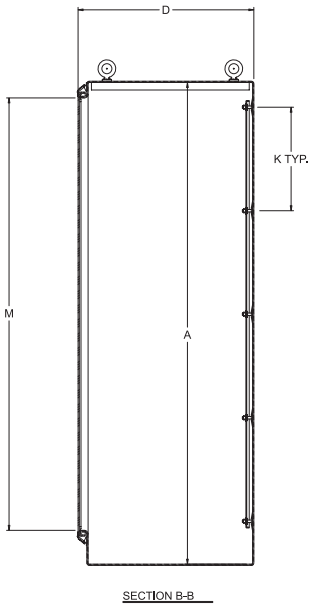
All measures are in inches, items in parentheses are in millimeters

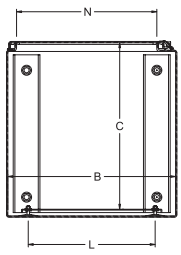
*Panel ordered separately.

N ControlTower© Single Door, Free Standing

FS	Type 12, SS hinged, latched down cover
FSHWT	Type 4X, SS hinged, latched down cover
FSFHLWT	Type 4X, fiberglass hinged, through the door latches
FSRT	Type 3R, SS hinged, latched down cover

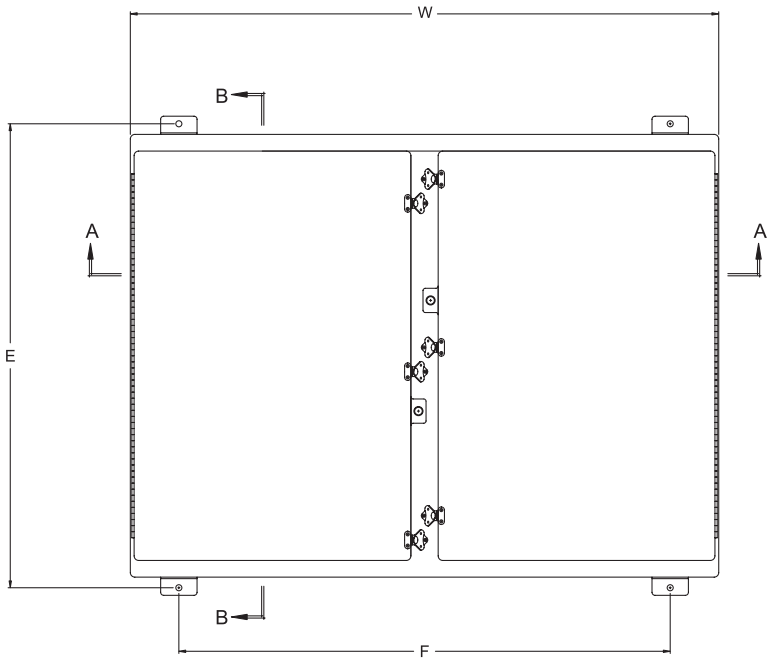


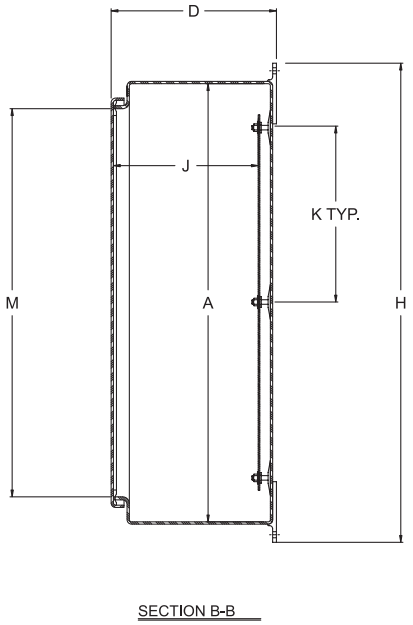




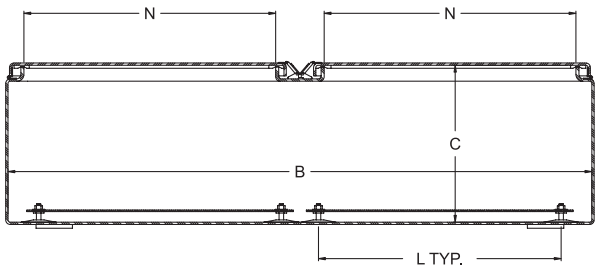
N ControlTower© Double Door, Wall Mounted

DDHWT Type 4X, SS hinged, latched down cover
DDRT Type 3R, SS hinged, latched down cover





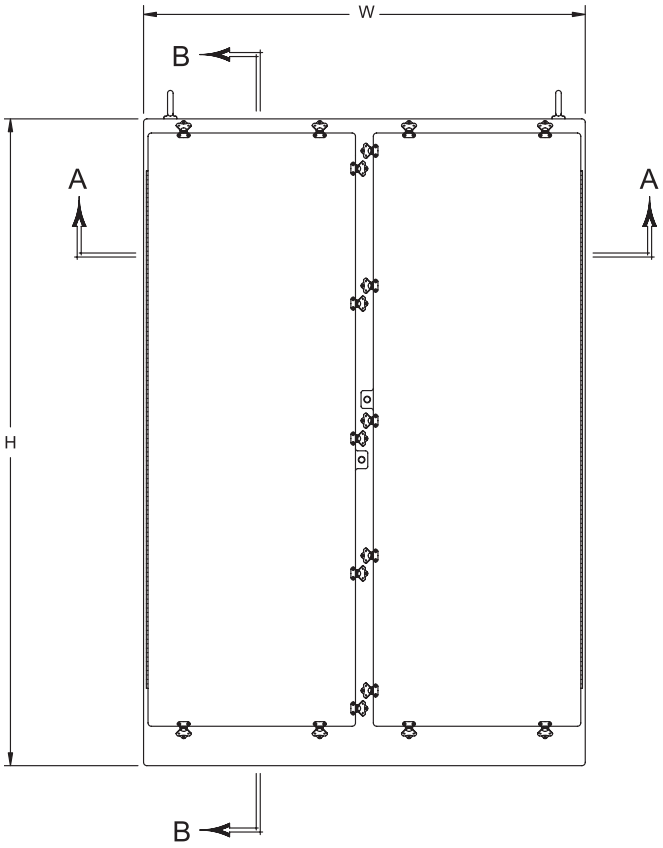
SECTION B-B

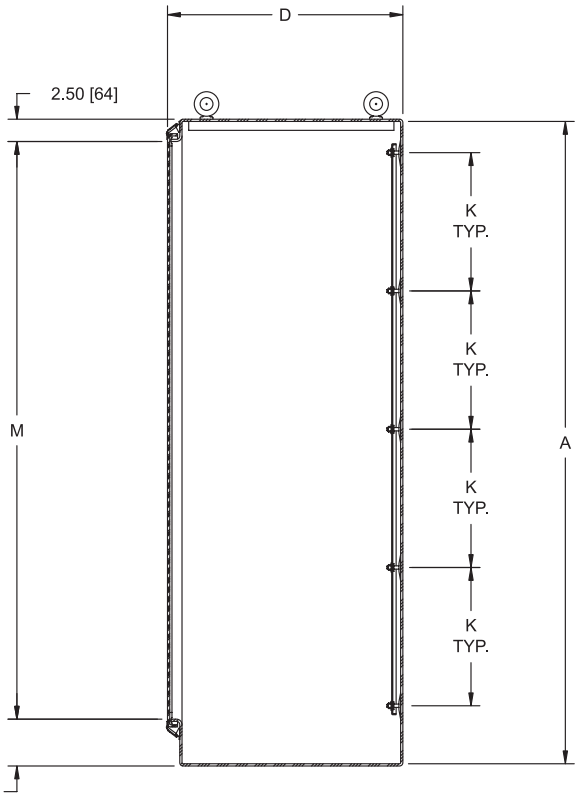


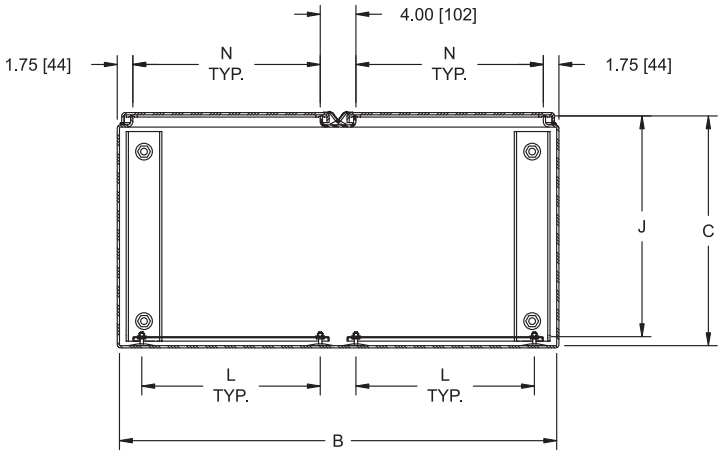
SECTION A-A

N ControlTower© Double Door, Free Standing

FSDD	Type 12, SS hinged, latched down cover
FSDDHWT	Type 4X, SS hinged, latched down cover
FSDDFHLWT	Type 4X, fiberglass hinged, through the door latches
FSDDRT	Type 3R, SS hinged, latched down cover







Control Tower Enclosures Dimensions

SIZE ID 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	SHIPPING WEIGHT	PANEL NUMBER
N364812DDRT N364812DDFHLWT	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)**
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**
N54428DDRT	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)**
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**
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**
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)	NA	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)	NA	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	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)	NA	17.88 (454)	15.50 (388)	30.00 (762)	64.75 x 32.00 (1645 x 813)	11	290 lbs.	BP7236**
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**
N903620FSRT	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)	NA	19.88 (505)	20.00 (508)	30.00 (762)	82.75 x 32.00 (2102 x 813)	6	307 lbs.	BP9036**

*Available as made to order.
All measures are in inches, items in parentheses are in millimeters.
NOTE: Mounting hole dimension is .50 inches.
**Panel ordered separately.

Control Disconnect Enclosures

C

Stahlin's Control Disconnect Enclosures offer 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.

Control Disconnect Enclosure 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

Control Disconnect Industry Standards

UL/cUL 50	File E64358SP Type 1, 3, 3R, 4X, 12 as designated
NEMA 250	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)

Technical Specifications - Control Disconnect Enclosures

Base configuration (no suffix) - Vertical disconnect handle, without pre-mounted control

NOTES:

C Construction

Material	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
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

C Industry Standards

UL/cUL 50	File E64358SP Type 1, 3, 3R, 4X, 12
NEMA 250	Type 1, 3, 3R, 4X, 12
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)

C Accessories

Back Panels

Carbon Steel	BP__CS	pg. 149 - 150

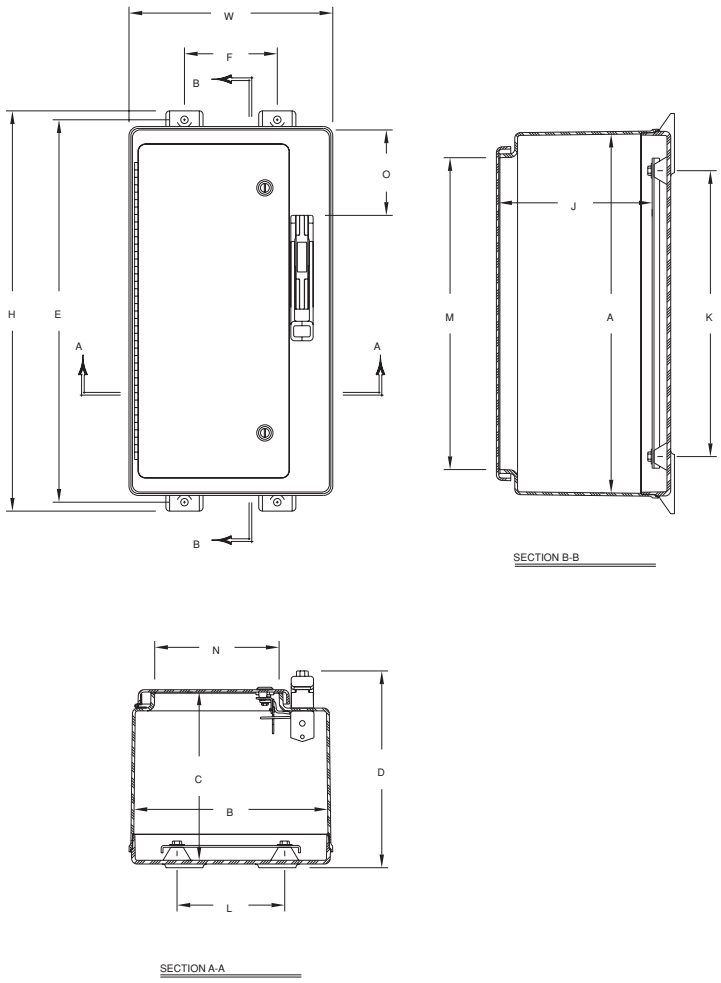
Accessories

Drain & Breather Vents	pg. 144, 146
Hole Plugs	pg. 145
Assorted Hubs and Cord Grips	pg. 145, 148
All Other Accessories	pg. 144 - 159

C Modifications

Custom Colors	pg. 12 - 13
Silk Screening	pg. 12 - 13
EMI/RFI Shielding	pg. 12 - 13
Custom Window	pg. 12 - 13
Custom Cutouts/Holes	pg. 12 - 13

Control Disconnect Enclosures Technical Drawings



Control Disconnect Enclosures

SIZE ID 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	SHIPPING 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.

*Disconnect, fuse block, breaker, yoke, switches, or other internal components are not furnished with enclosure.

**Panel ordered separately.

General Accessories

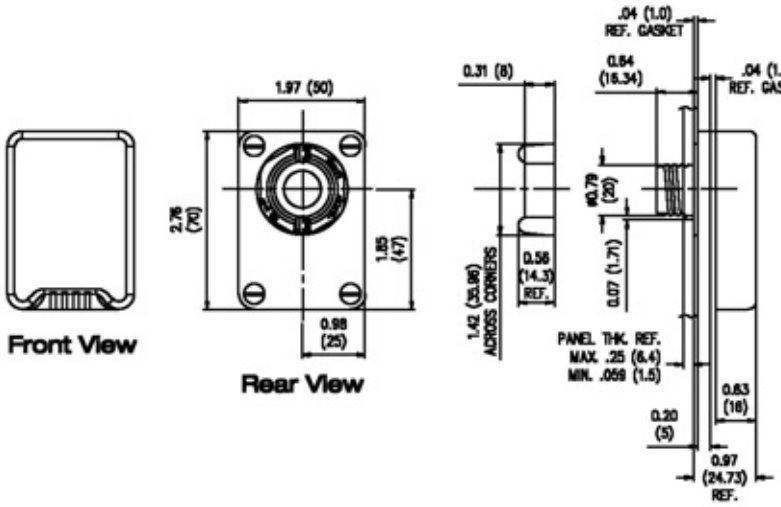
Stahlin enclosures are created in standard forms and shapes, but the ability to customize into unique end user configurations may be the single best reason to buy Stahlin products. Certain accessories are available by part number and can be added at the time of the enclosure purchase, or added later as a separate item.

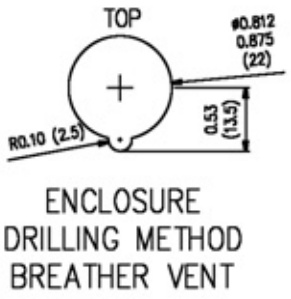
By comparison, modifications are considerably more complex and end user specific and they must be implemented before the enclosure leaves the factory. All items listed as **Accessories** are available as separately priced items. These services designated factory install **Modifications** must be requested at the time of order placement.

Breather Vent – 4X

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.

Breather Vent
CATALOG NUMBER
BV4XKIT

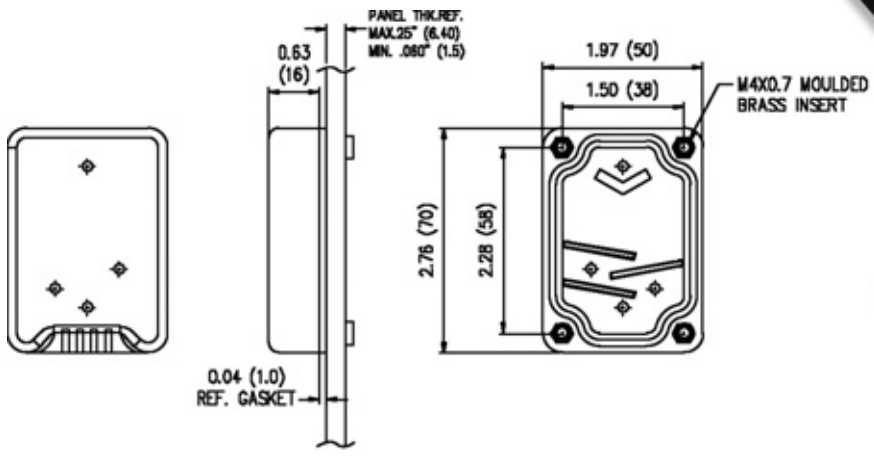




Drain Vent – 4X

Stahlin's new 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.

Drain Vent
CATALOG NUMBER
DV4XKIT



PVC Coated Hubs for use with PVC Coated Rigid Conduit

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

Plasti-Bond Red Hubs

CATALOG NUMBER	SIZE
STPRSTG2	3/4"
STPRSTG3	1"
STPRSTG4	1 1/4"
STPRSTG5	1 1/2"

Copper Free Aluminum Hubs for use with Metallic Conduit

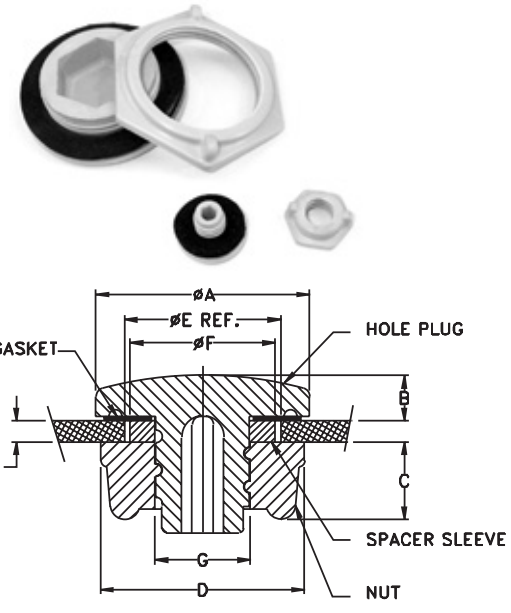
Metallic conduit connections can be made with the use of an aluminum hub available in seven standard sizes.

Aluminum Hubs

CATALOG NUMBER	INSIDE DIAMETER	HOLE DIAMETER
M50	1/2"	7/8"
M75	3/4"	11/16"
M100	1"	11/4"
M125	1 1/4"	1 11/16"
M150	1 1/2"	1 7/8"
M200	2"	2 3/8"
M250	2 1/2"	2 7/8"
M300	3"	3 7/16"
M400	4"	4 3/8"

PluggIt!

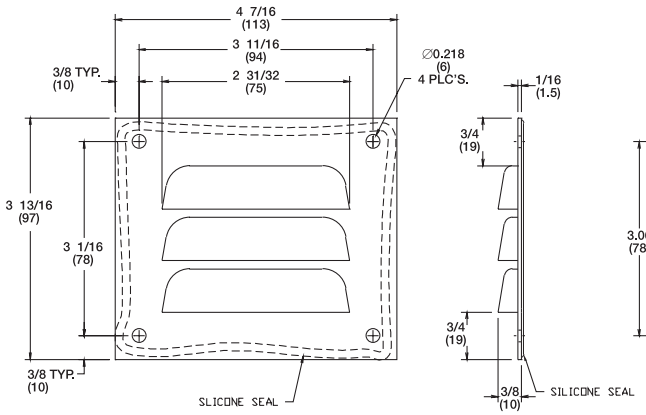
- Superior corrosion resistance compared to rust-prone carbon steel and other metallic alternatives helps ensure increased enclosure life expectancy.
- Cost effective when compared to either carbon or stainless steel alternatives.
- Considerably better long-term resistance to UV degradation versus UV-susceptible 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 Stahlin 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.



PluggIt!

Kit Number	Config.	ØA	B +0.05" -0.00"	C	D Across Flats	ØE Ref. - Nom. Hole Dia. Range	ØF	ØG	Common Industry Applications
HPSERIES 1	HP1	1.00" (25.40)	0.22" (5.59)	0.35" (8.89)	0.88" (22.35)	0.50" - 0.56" (12.70 - 14.29)	N/A	0.44" (11.18)	1/2" Dia. Hole
	HP2					0.63" - 0.69" (16.00 - 17.46)	0.56" (14.22)		5/8" Dia. Hole
	HP3					0.75" - 0.81" (19.05 - 20.64)	0.68" (17.27)		3/4" Dia. Hole
HPSERIES 1.5	HP3.5	1.20" (30.48)	0.22" (5.59)	0.33" (8.38)	1.04" (26.39)	0.88" (22.35)	N/A	0.81" (20.57)	1/2" Conduit
HPSERIES 2	HP4	1.50" (38.10)	0.22" (5.59)	0.38" (9.63)	1.38" (35.05)	0.88" - 1.00" (22.35 - 25.40)	N/A	0.85" (21.59)	1/2" Conduit 22mm PB
	HP5					1.06" - 1.12" (26.92 - 28.45)	1.03" (26.16)		3/4" Conduit
	HP6					1.22" - 1.28" (30.73 - 32.51)	1.19" (30.22)		30mm PB
HPSERIES 3	HP7	2.00" (50.80)	0.22" (5.59)	0.38" (9.63)	1.88" (47.75)	1.38" - 1.50" (35.05 - 38.10)	N/A	1.35" (34.29)	1" Conduit
	HP8					1.69" - 1.75" (42.67 - 44.45)	1.65" (41.91)		1-1/4" Conduit
HPSERIES 4	HP9	2.75" (69.85)	0.22" (5.59)	0.41" (10.41)	2.63" (66.67)	2.00" - 2.12" (50.80 - 53.85)	N/A	1.97" (50.04)	1-1/2" Conduit
	HP10					2.50" - 2.56" (63.50 - 65.09)	2.44" (61.89)		2" Conduit
HPSERIES 5	HP11	3.38" (85.85)	0.22" (5.59)	0.34" (8.63)	3.38" (85.85)	3.00" (76.20)	N/A	2.97" (75.44)	2-1/2" Conduit
HPSERIES 6	HP12	4.00" (101.60)	0.22" (5.59)	0.34" (8.63)	4.00" (101.60)	3.62" (91.95)	N/A	3.59" (91.19)	3" Conduit
HPSERIES 7	HP13	4.50" (114.30)	0.22" (5.59)	0.38" (9.63)	4.50" (114.30)	4.12" (104.65)	N/A	4.09" (103.88)	3-1/2" Conduit
HPSERIES 8	HP14	5.00" (127.00)	0.22" (5.59)	0.41" (10.41)	5.00" (127.00)	4.62" (117.35)	N/A	4.59" (116.58)	4" Conduit

Louver Plate Vent



Louver Plate Vent
CATALOG NUMBER
LP1
LPK3KIT

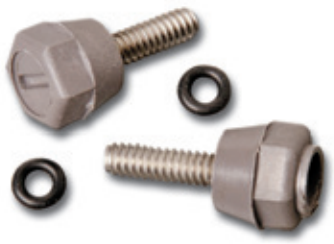
Note: Kit includes LP1 plus silicone pack and four rivets

Drain & Vent

Drain & Vent
CATALOG NUMBER
DV1PVC
DVK3KIT

Note: Kit includes DV1PVC and silicone packet

Encapsulated Screws



Encapsulated
CATALOG NUMBER
2PKENCAP
4PKENCAP

Stainless Steel Screws

Stainless Steel Cover 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

Note: * includes cover screws and "O" rings.
** includes back panel screws and washers.

Vapor Capsule

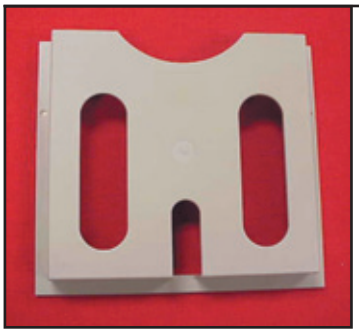
Stahlin Vapor Capsules contain a unique vapor phase inhibitor designed to protect metallic surfaces within an enclosure against airborne corrosion.

Louver Plate Vent

CATALOG NUMBER
VC21

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

Plastic Print Pocket

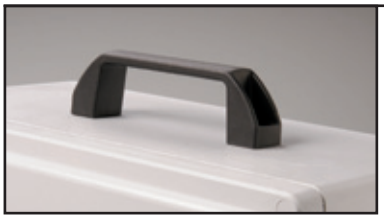


Stahlin's Print Pocket is self adhesive and can be utilized to store prints or other important documents within the enclosure.

Stainless Steel Cover Screws

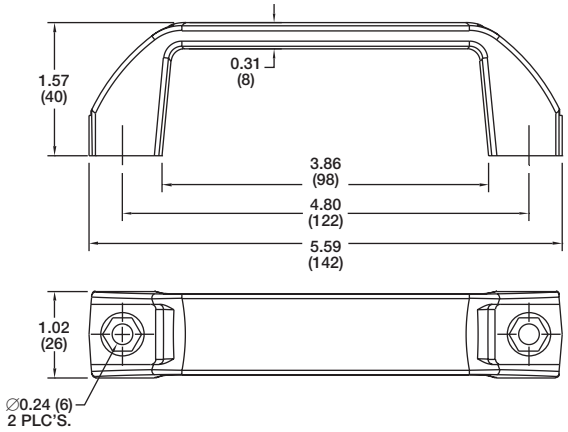
CATALOG NUMBER	HEIGHT	WIDTH	DEPTH
PRTPKT	9.3"	10.4"	1.2"

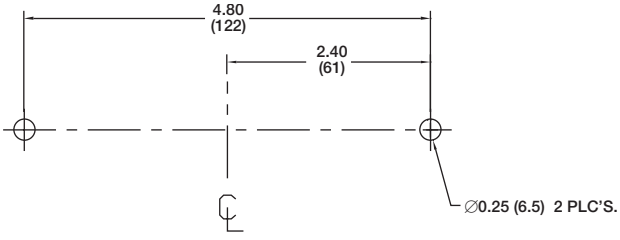
Carrying Handle



Carrying Handle

CATALOG NUMBER
CH109506





Hole Mounting Detail

Nylon Cord Grip Fittings

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.

NEMA STD FBI-1983
UL STD 514 File No. 53599 Type 4
CSA STD 22.2 No. 18 File No. 28985 Type 4
HAZ LOC NEC 501-4(b), 502-4(a)(2), 503-3(a)
Class I, Div 2, Class II Div 1 and 2; Class III Div 1 and 2

Nylon Cord Grip

CATALOG NUMBER	HUB DIAMETER	CABLE DIAMETER RANGE	INSIDE BODY DIAMETER
5122	1/2"	.250-.312	.625
5123	1/2"	.312-.375	.625
5124	1/2"	.375-.437	.625
5125	1/2"	.437-.500	.625
5126*	1/2"	.500-.562	.625
5146	3/4"	.562-.625	.788

*Cable jacket may have to be stripped for clearance

Nominal O.D.

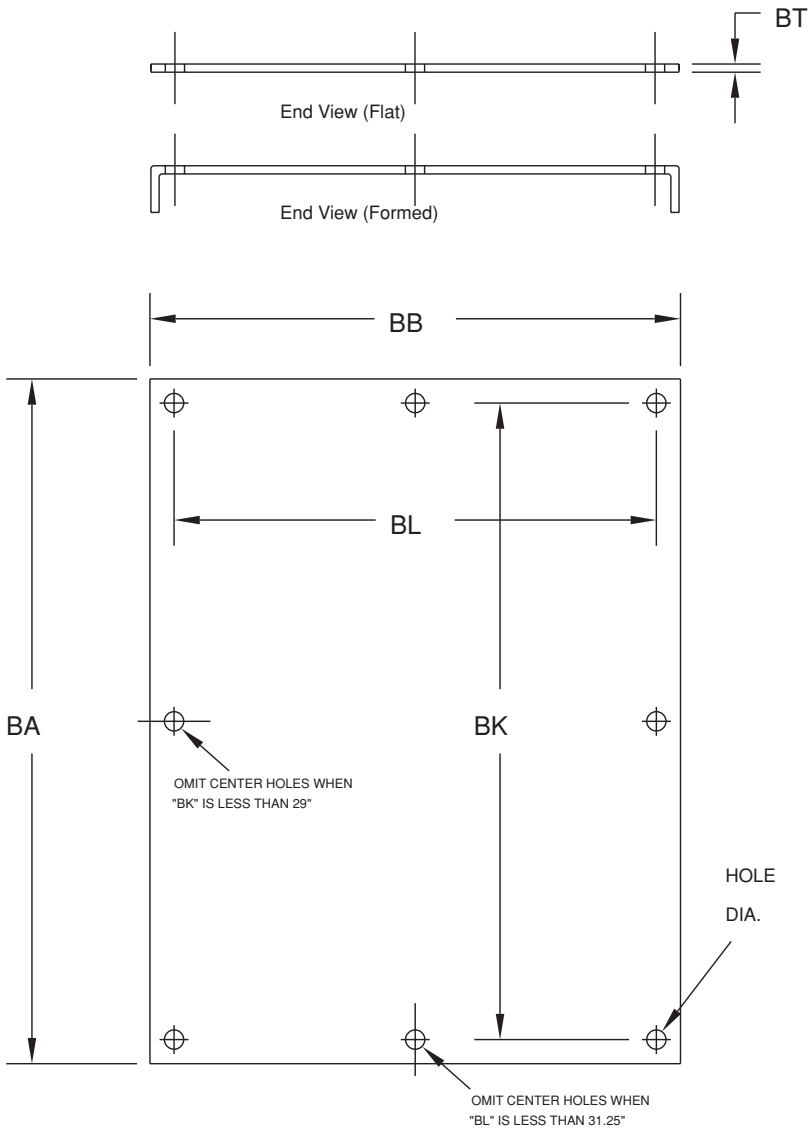
SIZE	TYPE	2 COND	3 COND	4 COND
18	SV-SVT	.24	.25	.26
	SJ-SJO	.31	.34	.36
	S-SO	.39	.41	.44
	SJTO	.30	.33	.36
	STO	.38	.39	.42
16	SJ-SJO	.33	.36	.39
	S-SO	.41	.43	.49
	SJTO	.32	.35	.39
	STO	.39	.42	.47
14	SJO	.43	.47	
	S-SO	.53	.56	.61
	STO	.52	.55	.59
	BDC			.40
12	S-SO	.61	.64	.67
	STO	.59	.63	.67
	BDC			.45
10	S-SO	.64	.69	.75
	STO	.64	.68	.74
	BDC			.50
8	S-SO	.79	.90	.97
	STO	.81	.85	.96
	BDC			.68
6	S-SO	.91	.99	1.07
	STO	.95	1.00	
	BDC			.80
4	S-SO	1.09	1.15	1.29
	STO	1.10	1.15	1.30
	BDC			.94
2	STO	1.29	1.34	
	BDC			1.08

Dimensional data is taken from various cable manufacturers.
It is not guaranteed but usable for general purposes.

Back Panels

Back Panels				
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



Typical Series Designators: DS, J, JCC, RJ, CL, PC, F Back Panel Dimensions

SIZE ID 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)	.060 (2)	.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)	.060 (2)	.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)	.060 (2)	.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)	.060 (2)	.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)	.060 (2)	.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)	.060 (2)	.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)	.060 (2)	.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)	.060 (2)	.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)	.060 (2)	.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)	.060 (2)	.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)	.060 (2)	.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)	.060 (2)	.075 (2)	Flat	.25 (6)	4	2.25 lb.	2.1 lb.	6.1 lb.	6.1 lb.

Caution: Metric units are for reference do not convert.

Note: When specifying combine Size ID Number and Material Suffix
Example: BP64SS for 6x4 Stainless Steel Back Panel

Typical Series Designators: C - Disconnect Back Panel Dimensions

SIZE ID 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)	0.13 (2)	Formed	0.31 (8)	4	7.3 lbs.	20 x 16 Disconnect Enclosure
BP2412CD	20.88 (530)	9.38 (238)	19.25 (489)	7.25 (184)	0.13 (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)	0.13 (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)	0.13 (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)	0.13 (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

Typical Series Designation: N Series Back Panel Dimensions

SIZE ID NUMBER	BA	BB	BK	BL	BT (AL)	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)	.060 (2)	.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)	.060 (2)	.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)	.060 (2)	.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)	.060 (2)	.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)	.13 (3)	.060 (2)	.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)	.13 (3)	.060 (2)	.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)	.13 (3)	.060 (2)	.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)	.13 (3)	.060 (2)	.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)	.13 (3)	.060 (2)	.105 (3)	Flat	.50 (13)	4	11 lbs	15.2 lbs	27 lbs
BP3636	31.00 (787)	33.00 (838)	29.00 (737)	31.00 (787)	.13 (3)	.060 (2)	.105 (3)	Formed	.50 (13)	6	14 lbs	18.5 lbs	33 lbs
BP4836	45.00 (1143)	33.00 (838)	43.25 (1099)	31.25 (794)	.13 (3)	.060 (2)	.105 (3)	Formed	.50 (13)	8	20 lbs	N/A	47 lbs
BP6036	57.00 (1448)	33.00 (838)	55.25 (1403)	31.25 (794)	.13 (3)	.105 (3)	.105 (3)	Formed	.50 (13)	8	25 lbs	N/A	60 lbs
BP7225	64.00 (1626)	21.00 (533)	62.00 (1575)	19.00 (483)	.13 (3)	.105 (3)	.105 (3)	Formed	.50 (13)	10	18.5 lbs	N/A	43 lbs
* BP7249	64.00 (1626)	22.00 (559)	62.00 (1575)	20.00 (508)	.13 (3)	.105 (3)	.105 (3)	Formed	.50 (13)	10	38 lbs	N/A	86 lbs
* BP7260	64.00 (1626)	27.50 (698)	62.00 (1575)	25.50 (648)	.13 (3)	.105 (3)	.105 (3)	Formed	.50 (13)	10	46 lbs	N/A	109 lbs

* Set of two panels.

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

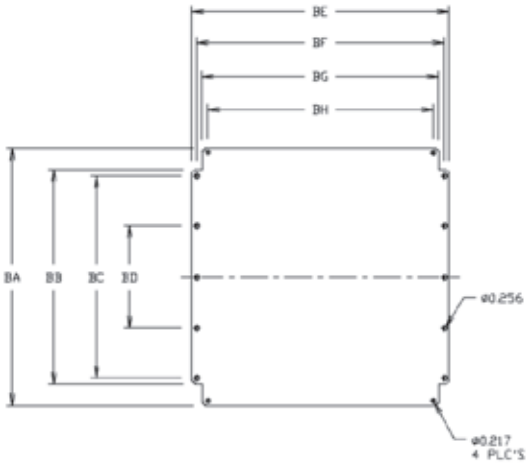
Typical Series Designation: N Series Back Panel Dimensions

SIZE ID 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
BP3648*	31.00 (787)	22.00 (559)	29.00 (737)	20.00 (508)	0.125 (3)	0.25 (6)	0.060 (2)	0.105 (3)	Flat	0.500 (13)	8	1 lb.	N/A	3.3 lbs.
BP5442*	49.00 (1245)	19.00 (483)	47.00 (1194)	17.00 (432)	0.125 (3)	0.25 (6)	0.060 (2)	0.105 (3)	Formed	0.563 (14)	6	2 lbs.	N/A	6.7 lbs.
BP6024	57.00 (1448)	21.00 (533)	55.25 (1403)	19.25 (489)	0.125 (3)	0.25 (6)	0.060 (2)	0.105 (3)	Formed	0.563 (14)	6	2.5 lbs.	N/A	5.7 lbs.
BP6048*	52.50 (1334)	21.5 (546)	50.50 (1283)	19.50 (495)	0.125 (3)	0.25 (6)	0.060 (2)	0.105 (3)	Formed	0.563 (14)	10	1.5 lbs.	N/A	8.7 lbs.
BP6060*	52.50 (1334)	27.50 (699)	50.50 (1283)	25.50 (648)	0.125 (3)	0.25 (6)	0.060 (2)	0.105 (3)	Formed	0.563 (14)	10	4.5 lbs.	N/A	10.8 lbs.
BP6248*	54.50 (1384)	21.50 (546)	52.50 (1334)	19.50 (495)	0.125 (3)	0.25 (6)	0.060 (2)	0.105 (3)	Formed	0.563 (14)	10	5.5 lbs.	N/A	13.4 lbs.
BP6260*	54.50 (1384)	27.50 (699)	52.50 (1334)	25.50 (648)	0.125 (3)	0.25 (6)	0.060 (2)	0.105 (3)	Formed	0.563 (14)	10	5.8 lbs.	N/A	14 lbs.
BP7224	64.00 (1626)	20.00 (508)	62.00 (1575)	18.00 (457)	0.125 (3)	0.25 (6)	0.060 (2)	0.105 (3)	Formed	0.563 (14)	10	7 lbs.	N/A	17 lbs.
BP7230	64.00 (1626)	26.00 (660)	62.00 (1575)	24.00 (610)	0.125 (3)	0.25 (6)	0.060 (2)	0.105 (3)	Formed	0.563 (14)	10	11 lbs.	N/A	27 lbs.
BP7231	64.00 (1626)	27.00 (686)	62.00 (1575)	25.00 (635)	0.125 (3)	0.25 (6)	0.060 (2)	0.105 (3)	Formed	0.438 (11)	10	14 lbs.	N/A	N/A
BP7236	64.00 (1626)	32.00 (813)	62.00 (1575)	30.00 (762)	0.125 (3)	0.25 (6)	0.060 (2)	0.105 (3)	Formed	0.563 (14)	10	20 lbs.	N/A	47 lbs.
BP7237	64.00 (1626)	33.00 (838)	62.00 (1575)	31.00 (787)	0.125 (3)	0.25 (6)	0.060 (2)	0.105 (3)	Formed	0.563 (14)	10	25 lbs.	N/A	60 lbs.
BP7248*	64.00 (1626)	21.50 (546)	62.00 (1575)	19.50 (495)	0.125 (3)	0.25 (6)	0.060 (2)	0.105 (3)	Formed	0.563 (14)	10	18.5 lbs.	N/A	43 lbs.
BP7272*	64.00 (1626)	33.50 (851)	62.00 (1575)	31.50 (800)	0.125 (3)	0.25 (6)	0.060 (2)	0.105 (3)	Formed	0.563 (14)	10	38 lbs.	N/A	128 lbs.
BP7460*	66.00 (1676)	27.50 (699)	64.00 (1626)	25.50 (648)	0.125 (3)	0.25 (6)	0.060 (2)	0.105 (3)	Formed	0.563 (14)	10	46 lbs.	N/A	109 lbs.
BP7472*	66.00 (1676)	33.50 (851)	64.00 (1626)	31.50 (800)	0.125 (3)	0.25 (6)	0.060 (2)	0.105 (3)	Formed	0.563 (14)	10	60 lbs.	N/A	132 lbs.
BP9024	82.00 (2083)	20.00 (508)	80.00 (2032)	18.00 (457)	0.125 (3)	0.25 (6)	0.060 (2)	0.105 (3)	Formed	0.563 (14)	10	23 lbs.	N/A	49 lbs.
BP9036	82.00 (2083)	32.00 (813)	80.00 (2032)	30.00 (762)	0.125 (3)	0.25 (6)	0.060 (2)	0.105 (3)	Formed	0.563 (14)	10	36 lbs.	N/A	79 lbs.
BP9048*	82.00 (2083)	21.5 (546)	80.00 (2032)	19.50 (495)	0.125 (3)	0.25 (6)	0.060 (2)	0.105 (3)	Formed	0.563 (14)	10	48 lbs.	N/A	105 lbs.
BP9072*	82.00 (2083)	33.50 (851)	80.00 (2032)	31.50 (800)	0.125 (3)	0.25 (6)	0.060 (2)	0.105 (3)	Formed	0.563 (14)	10	72 lbs.	N/A	164 lbs.

* Set of two panels.

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

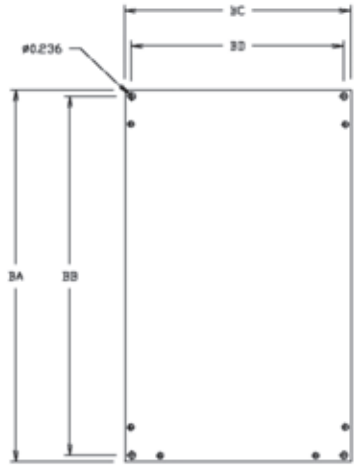
Note: When specifying combine Size ID Number and Material Suffix
Example: BP1610CS for 16x10 Carbon Steel Back Panel



DuraBoxx® D Series Back Panel Dimensions

BACK PANEL MODEL NO.	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

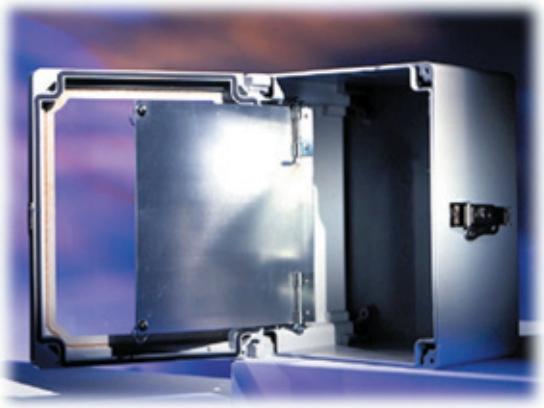
Caution: Metric units are for reference; do not convert.



DuraBoxx® DL Series Back Panel Dimensions

BACK PANEL MODEL NO.	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.



A dead front panel is designed to obscure the view 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 a clear hinged door. This emphasizes the importance of full clear window fronts and fully clear covers.

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.

Typical Series Designators: CL and CLW Series Dead Front Panels

Size ID Number	H x W	Panel Thickness	Panel Type	Weight (Aluminum) (suffix: AL)	Fits Typical Enclosure Size
DF707	4.68 x 6.56 (119 x 167)	0.080 (2)	Flat	3 oz.	7 x 7 (178 x 178)
DF907	6.68 x 6.56 (170 x 167)	0.080 (2)	Flat	4 oz.	9 x 7 (229 x 178)
DF1109	8.68 x 8.56 (220 x 217)	0.080 (2)	Flat	8 oz.	11 x 9 (279 x 229)
DF1311	10.68 x 10.56 (271 x 268)	0.080 (2)	Flat	12 oz.	13 x 11 (330 x 279)
DF1513	12.68 x 12.5 (322 x 317)	0.080 (2)	Flat	18 oz.	15 x 13 (381 x 330)

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

Enclosure Specific Accessories - Dead Front Panels

Typical Series Designators: J, JW, JCC, RJ, RJW Series Dead Front Panels

Size ID 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)

Typical Series Designators: N Series Dead Front Panels

Size ID Number	H x W	Panel Thickness	Panel Type	Weight (Aluminum) (suffix: AL)	Fits Typical Enclosure Size
2016DF	16.00 x 11.50 (406 x 292)	0.080 (2)	Flat	2.4 lbs.	20 x 16 (508 x 406)
2420DF	20.00 x 15.38 (508 x 391)	0.080 (2)	Flat	3.8 lbs.	24 x 20 (610 x 508)
2424DF	20.00 x 19.38 (508 x 492)	0.080 (2)	Flat	4.8 lbs.	24 x 24 (610 x 610)
3020DF	26.00 x 15.38 (660 x 391)	0.080 (2)	Flat	5.0 lbs.	30 x 20 (762 x 508)
3024DF	26.00 x 20.25 (660 x 514)	0.080 (2)	Flat	6.5 lbs.	30 x 24 (762 x 610)
3630DF	32.50 x 25.88 (826 657)	0.080 (2)	Flat	10.5 lbs.	36 x 30 (914 x 762)

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

J Series - JLL150KIT

NLL150WTKIT

SSLKIT

Control / N Series NLL150KIT

Latches for Field Replacement

SIZE ID NUMBER	CONFIGURATION	FAMILY	MAINTAINS 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

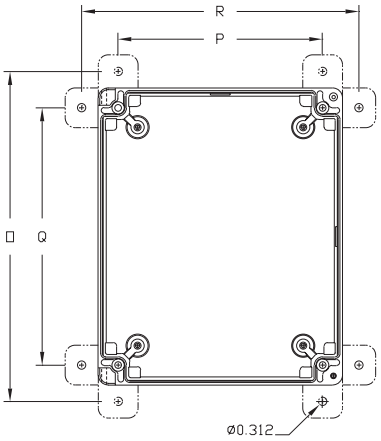
WKJLatch

HASPKITSS

Field Replacements or Modifications

SIZE ID NUMBER	CONFIGURATION	FAMILY	MAINTAINS DESCRIPTION
WKJLatch	Wing Through Door	J, RJ	Operator mechanism for "J" series.
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

Classic Series Mounting Feet

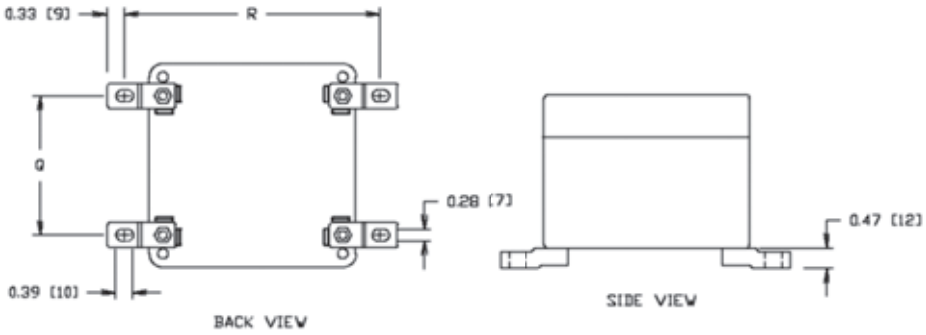


Mounting Feet
CLMTGFTKIT

Classic Series Mounting Feet Dimensions

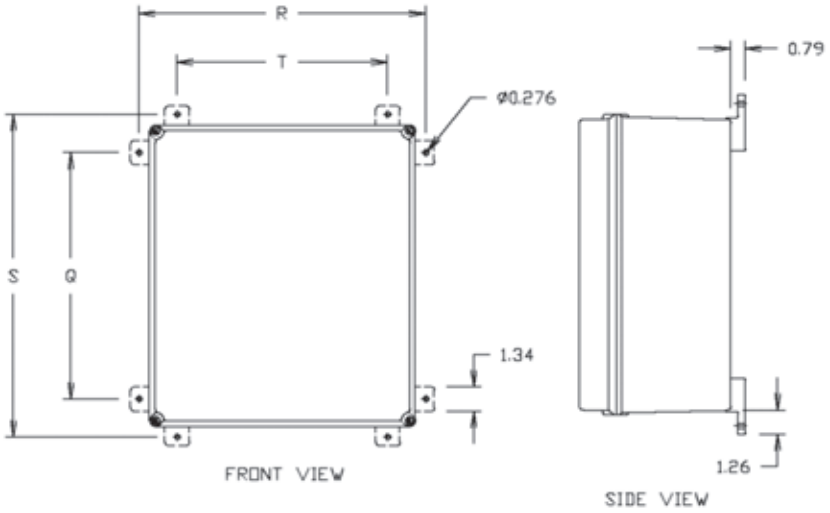
SIZE	O	P	Q	R
707	8.46 (215)	5.71 (145)	5.71 (145)	8.46 (215)
907	10.46 (266)	5.71 (145)	7.71 (196)	8.46 (215)
1109	12.46 (316)	7.71 (196)	9.71 (247)	10.46 (266)
1311	14.46 (367)	9.71 (247)	11.71 (297)	12.46 (316)
1513	16.46 (418)	11.71 (297)	13.71 (348)	14.46 (367)

DuraBoxx® Mounting Feet



DuraBoxx® D Series Optional Mounting

USED WITH MODEL NO.	MOUNTING Q X R	MTG FOOT KIT NO.
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 Optional Mounting

USED WITH MODEL NO.	MOUNTING Q X R	MOUNTING S X T	MTG FOOT KIT NO.
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

FT Fiberglass Trough

FT6612

Fiberglass trough is a useful complement to wall mount control systems. Made from fiberglass pultrusion, trough features permanent end caps as well as a snap lock cover that forms a solid housing.

Trough is offered as simple protection to wiring from water, oil, dust or corrosive environments, including greenhouses, food processing, plating rooms, pickling and printed circuit board manufacturing. The basic offering includes a six by six structure that is available in six common lengths.

Fiberglass trough & strut do not carry any UL or CSA ratings.

Fiberglass Trough Dimensions

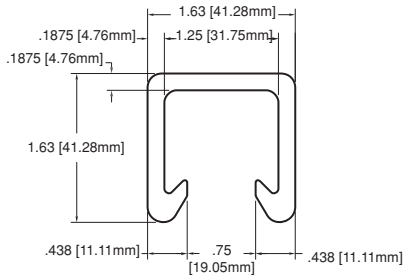
SIZE ID NUMBER	INSIDE DIMENSIONS H X W X D	OUTSIDE DIMENSIONS H X W X D	UNIT WEIGHT
FT6612	6 x 6 x 12 (152 x 152 x 305)	6-3/8 x 6-5/8 x 12-3/8 (162 x 168 x 314)	4.82 lbs.
FT6624	6 x 6 x 24 (152 x 152 x 610)	6-3/8 x 6-5/8 x 24-3/8 (162 x 168 x 619)	8.61 lbs.
FT6636	6 x 6 x 36 (152 x 152 x 914)	6-3/8 x 6-5/8 x 36-3/8 (162 x 168 x 924)	12.40 lbs.
FT6648	6 x 6 x 48 (152 x 152 x 1219)	6-3/8 x 6-5/8 x 48-3/8 (162 x 168 x 1229)	16.19 lbs.
FT6660	6 x 6 x 60 (152 x 152 x 1524)	6-3/8 x 6-5/8 x 60-3/8 (162 x 168 x 1534)	19.98 lbs.
FT66120	6 x 6 x 120 (152 x 152 x 3048)	6-3/8 x 6-5/8 x 120-3/8 (162 x 168 x 3058)	40.00 lbs.

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

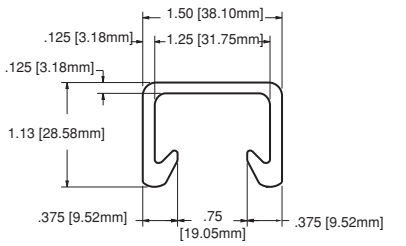
Fiberglass Strut

Fiberglass strut is the finishing complement to trough. Used for both mounting purposes and support, this rigid pultruded fiberglass mounting system is designed around two configurations. This rigid support system in completely corrosion resistant.

20P2000



20P1000



Fiberglass Strut		
SIZE ID NUMBER	SIZE (INCHES)	WEIGHT PER 100' STRUT
20P2000	10' length	65.0
20P1000	10' length	52.0

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.

Specifications for 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 backpanels 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
⬇ ⬇ Recommended ⬇ ⬇	Stainless Steel Fiberglass	Fiberglass Stainless Steel	Fiberglass Stainless Steel Aluminum Powder Coated Steel
Acceptable ⬇ ⬇	PC PVC Powder Coated Steel	PC Galvanized Steel Powder Coated Steel	Galvanized Steel
Limited or Unacceptable ⬇ ⬇	Aluminum Galvanized Steel	PVC Aluminum	PC PVC

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) Stahlin -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)
Poly-carbonate	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.

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

CHEMICAL	Aluminum	Fiber Glass Polyester	Steel			Stainless Steel		PC	PVC
			Polyester Powder	Urethane Enamel	Gal-vanized	Type 304	Type 316		
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
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

TABLE 3. Continued

CHEMICAL	Aluminum	Fiber Glass Polyester	Steel			Stainless Steel		PC	PVC
			Polyester Powder	Urethane Enamel	Gal-vanized	Type 304	Type 316		
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
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

TABLE 3. Continued

CHEMICAL	Aluminum	Fiber Glass Polyester	Steel			Stainless Steel		PC	PVC
			Polyester Powder	Urethane Enamel	Gal-vanized	Type 304	Type 316		
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
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

TABLE 3. Continued

CHEMICAL	Aluminum	Fiber Glass Polyester	Steel			Stainless Steel		PC	PVC
			Polyester Powder	Urethane Enamel	Gal-vanized	Type 304	Type 316		
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

CHEMICAL	Rigid PVC	Glass Nylon	Gaskets			Windows	
			Neoprene Rubber	Silicone Rubber	Urethane	Acrylic	Poly-carbonate
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

TABLE 4. Continued

CHEMICAL	Rigid PVC	Glass Nylon	Gaskets			Windows	
			Neoprene Rubber	Silicone Rubber	Urethane	Acrylic	Poly-carbonate
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
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	—

TABLE 4. Continued

CHEMICAL	Rigid PVC	Glass Nylon	Gaskets			Windows	
			Neoprene Rubber	Silicone Rubber	Urethane	Acrylic	Poly-carbonate
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
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

TABLE 4. Continued

CHEMICAL	Rigid PVC	Glass Nylon	Gaskets			Windows	
			Neoprene Rubber	Silicone Rubber	Urethane	Acrylic	Poly-carbonate
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

SPECIFICATION: 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-carbonate	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˚F	-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.

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

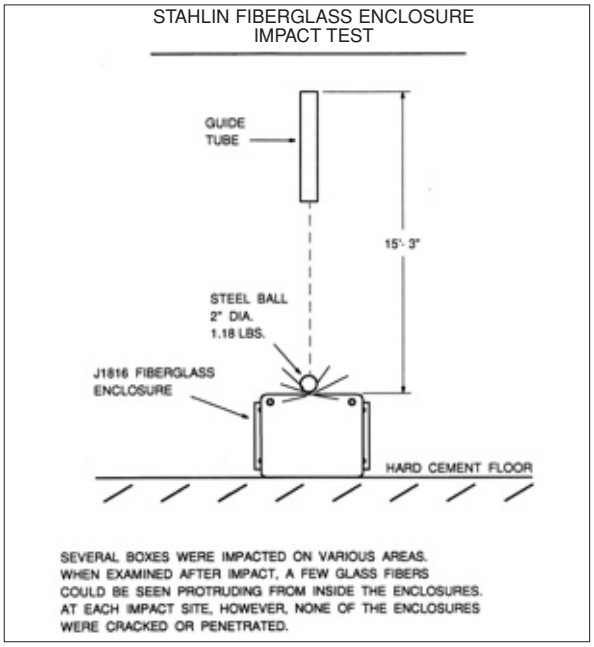
This is a newer and tougher version of UL94 V test. The sample size remains the same, but the flame size increases to five inches from 3/4 of an inch and number of ignitions increases from two to five, but the duration is decreased from ten to five seconds. To pass UL94-5VA the flame must be out in sixty 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

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.

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 sqft 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 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.

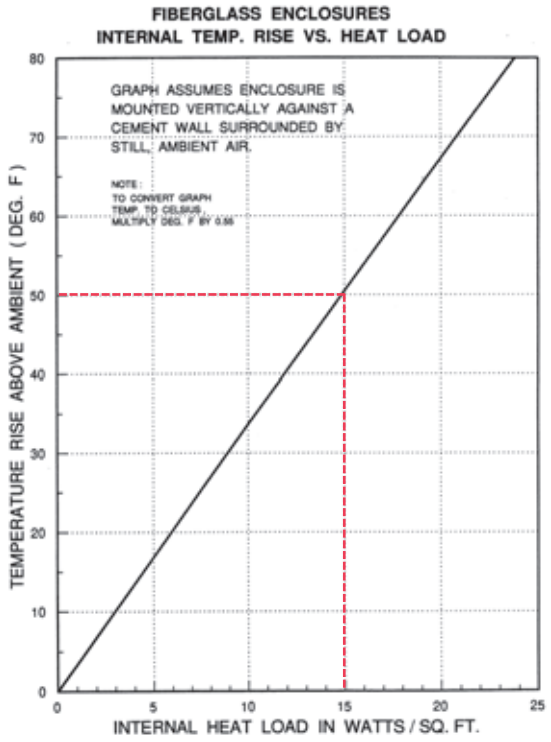
Example:

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. Internal Temperature Rise vs. Heat Load



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, In-door and in out-door 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/ft2 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 ft²

Heat Exchanger Capacity =
1000 watts/(25°F) - 0.22 x 53.49 ft² = 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 IN^2 = 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 ΔT x Q + Internal Heat Load, where Q = 0.62 BTU/hr/ft^2/°F (0.2 watts/hr/ft^2/°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 ft^2 x 15°F x 0.62 BTU/hr/fr^2/°F + 1707 BTU/hr
= 1790.5 BTU/hr

8.98 ft^2 x 15°F x 0.2 watts/ft^2 +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, ΔT, is calculated by subtracting the minimum ambient temperature (T_o) outside the enclosure from the required temperature (T_i) 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/ft^2 °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.

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:

COATING DESCRIPTION AND PROPERTIES	
Shielding Material	Nickel
Binder	Acrylic
Pencil Hardness	> 9 H
Sheet Resistance	< 2.5 Ohm/Square
Attenuation	60 - 65 dB

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.

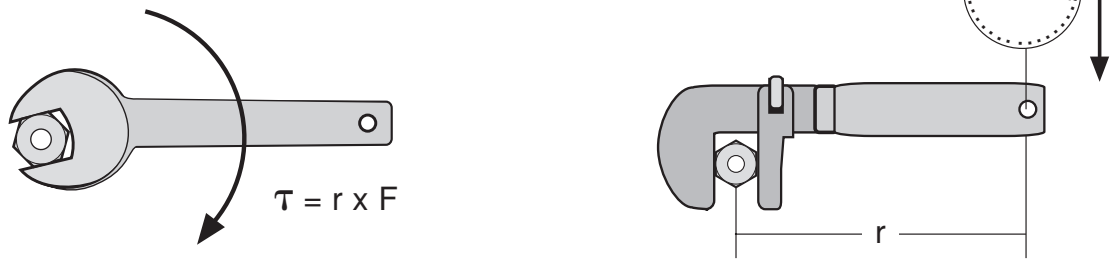
Table 3 is offered as the suggested maximum torque values for threaded products. The table is only a guide. Actual tests were conducted on dry, or near dry, products. Mating parts were wiped clean.

Table 3 – Strength Characteristics

Bolt Size	18-8 SS	Brass	Silicon 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.

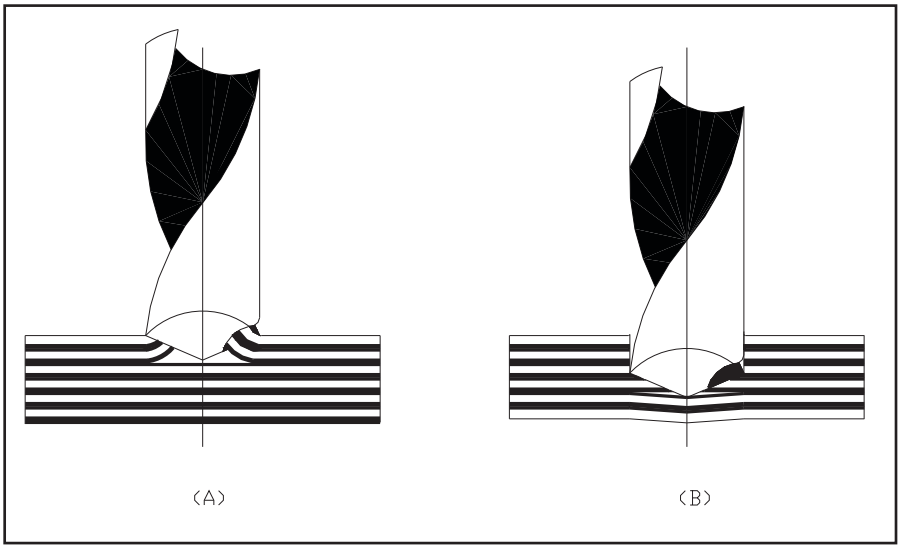


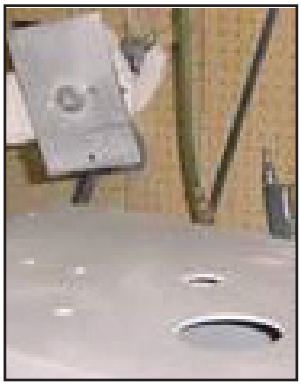
Figure A shows delamination of the surface of the part at the drill entrance. Figure B shows similar delamination just prior to drill exit.

(Continued on the following pages)

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.

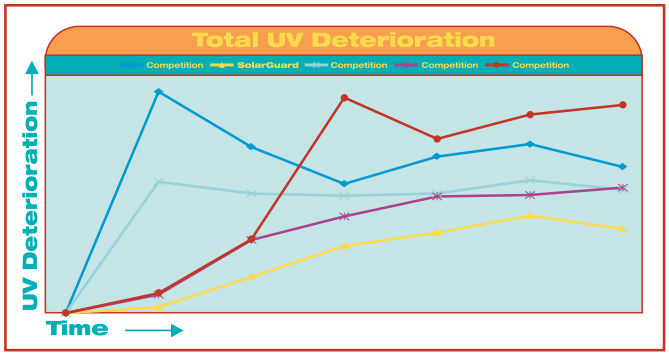


3. Routing. A third method is to use a router bit and router. This method produces very clean holes and cutouts but also requires the holes and cutouts to be manually laid out beforehand and a steady hand to stay within the layout lines. The use of a jig or fixture to help guide the handheld router or 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.

A non-haloginated fiberglass 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.

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 neo-pentyl 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.

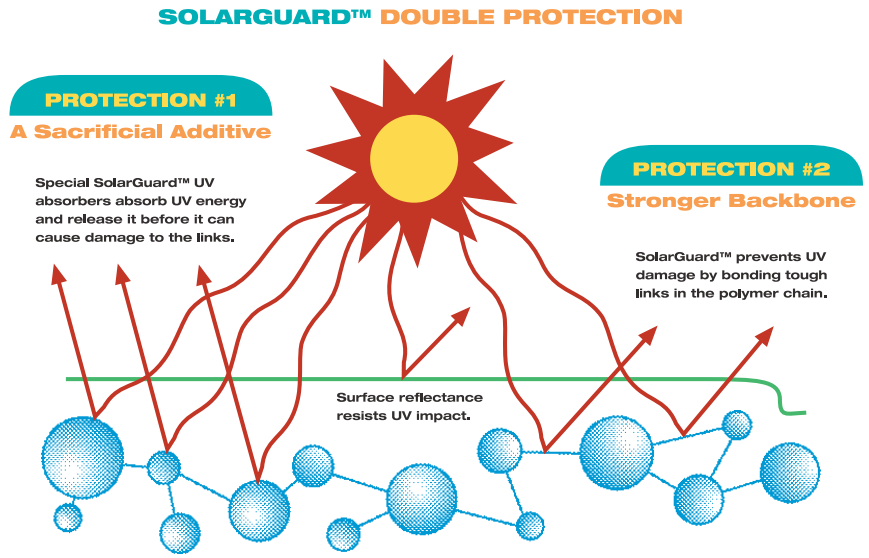
How SolarGuard™ Benefits You!
AT A GLANCE: DOUBLE PROTECTION THAT WORKS!

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.) THE SOLARGUARD™ WAY

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.

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.

Proof Through Performance

Physical Properties of SolarGuard™

MATERIALS TYPICAL PROPERTIES	TEST METHOD ASTM	SOLARGUARD POLYESTER FIBERGLASS (SMC)
Flexural Strength (psi)	D 790	17K
Notched Izod (ft-lb/in @ 1/8")	D256	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/°F²/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

Testing Procedures Used To Ensure That 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.

ANCE National Standardization and Certification of the Electrical 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 $dB = 10 \log_{10} (P_1/P_2)$ where P_1 = power of the interference wave before it passes through the enclosure, P_2 = 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 sun light 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.

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DSCC60604 thru 16148 . . . . . .W	22, 26, 27
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Notes

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