

All vessels require different degrees of protection from the elements. FREEMAN MARINE provides a window style to fulfill most requirements.

5000-SERIES WINDOWS are available in 8 basic shapes (see Shape Guide) as well as custom contours and in clamp-in, bolt-on & weld-in configurations.

**COMMERCIAL – FISHING – YACHT
MILITARY – SECURITY – RESCUE**

Custom specification models available for:

- Roll-Over Vessels
- R/F – EMI Suppression
- Ballistics Resistance
- Heated Glazing

FIXED

Watertight units for all types of vessels. Available as standard, medium, or heavy-duty, fixed windows can be ordered in clamp grip, weld-in or bolt-on configurations, in aluminum, steel or stainless.

HINGED

Can be ordered as side, top or bottom hinged. All hinged units are available with quadrants. Uses include deckhouses and staterooms, and other areas requiring a watertight opening window. Windows may be ordered as inward or outward hinged.

HORIZONTAL SLIDING

Commonly specified for tour vessels and inland ferries, horizontal sliding windows allow full visibility with quick-opening convenience. Accepting either single or insulated glazing, they are available with either 2 or 3 panels, optional insect screens and finish rings.

VERTICAL SLIDING

Half-drop or half-raise units are also available in some frame types. Standard Duty vertical sliders are clamp grip type windows available only in half-drop or half-raise configurations. Heavy-Duty (weld-in or bolt-on) models are available in half-drop, half-raise or full drop styles. Heavy-Duty windows are counterbalanced with stainless steel springs, and a waist rail clamp locks the window in the desired position.



FOUR STYLES:

- Fixed
- Horizontal Sliding
- Hinged
- Vertical Sliding



Coastal Motion — STANDARD DUTY (CLAMP-GRIP)

This line of standard duty, aluminum framed windows are typically installed in harbor and river tugs, pilot vessels, patrol craft, workboats, pleasure craft and fishing boats up to 50'.

Freeman Custom — MEDIUM DUTY (CLAMP-IN)

Clamp-in windows provide the tough commercial and military performance expected from Freeman windows combined with the cost effectiveness of a clamp-style installation method.

Freeman Custom — MEDIUM DUTY (WELD-IN)

Designed and intended for use on larger commercial & military craft as well as luxury yachts, window can be fabricated with available in aluminum or steel frames. Glue-in windows are generally configured with medium duty weld-in frames. Freeman routinely fabricates unique shapes and contours for yacht builders worldwide.

Freeman Custom — MEDIUM DUTY (BOLT-ON)

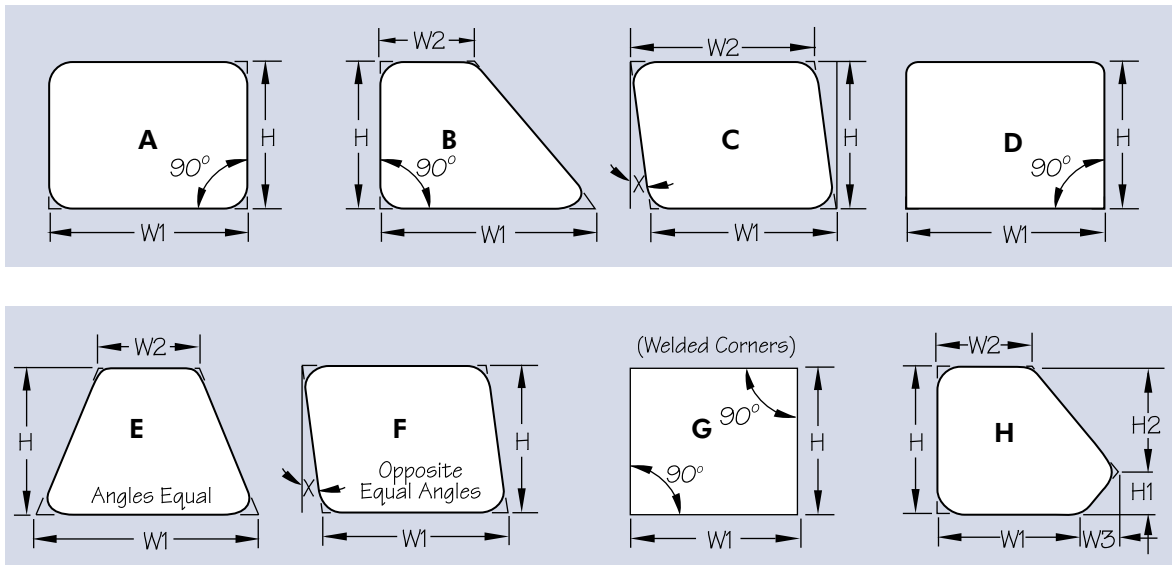
Designed specifically for blue-water applications and available in a variety of styles; currently installed on larger commercial and military-rescue vessels.

Freeman Custom — HEAVY-DUTY

Steel weld-in or aluminum bolt-on— for larger oceangoing vessels.



WINDOW SHAPES:



WINDOW GLASS AND GLAZING TERMINOLOGY:

GLASS, ELECTRICALLY HEATED - Performs like solid tempered safety glass, laminated in multiple layers. The outer glass layer represents the monolithic load requirement as specified by the naval architect or the shipbuilder. Heating is achieved by supplying power to micro-fine tungsten wires arranged in the vinyl inter layer or to an electrically resistant coating on one of the glass surfaces. An applied electrical charge creates a heated surface able to de-mist or de-ice, depending on specifications.

GLASS, FIRE-RATED - Fire-rated glass may be of several different configurations depending on standards to be met. Depending on requirements, it may be: a specialty glass laminate in multiple layers with a special interlayer that expands when subjected to intense heat; wire reinforced float glass; one of several specialty configurations.

GLASS, INSULATED - Insulated glass refers to two pieces of glass spaced apart and hermetically sealed to form a single-glazed unit with an inert gas filled space between. Heat transmission through this type of glass may be as low as half that without such an air space. It is also called **DOUBLE GLAZING** or **THERMOPANE GLASS**.

GLASS, LAMINATED - Two or more sheets with an inner layer of transparent plastic. If impacted, the glass itself may crack, but the fragments tend to adhere to the plastic inter layer. By keeping the glass in its place, the

protective inter layer provides added protection from dangerous flying or falling glass fragments. Used for overhead, safety glazing, and sound reduction.

GLASS, TEMPERED SAFETY - A heat-treated process that adds high strength to annealed float glass. When the glass breaks, fragments are small (less than 1/2" pieces). This type of glass is commonly used on pilot-house windows, portlights, and windscreens.

GLASS, THERMOPANE - See **GLASS, INSULATED**

GLASS, TINTED SAFETY - The addition of tinting adds glare and heat reduction features to a window. Standard tints available are green/blue (Solex™), gray and bronze. UV and light transmission specifications are available upon request. Normally specified as a percentage of tint, varying the thickness of the glass will make the tint appear lighter or darker (two pieces of glass that are of dissimilar thickness but with the same percentage of tint will appear to have a different tint).

PERSPEX - Polycarbonate lens.

SEALANTS AND TAPES FOR WINDOWS -

Depending on the window application, sealants range from silicone to polyurethane. Butyl™ tapes are commonly used for most fixed glazing applications. Synthetic rubber, flock coated rubber material and water repelling felt are used in sliding window applications. UV resistant sealant is specified where necessary.

WHATEVER THE SHAPE, SIZE, OR STYLE ...

**FREEMAN OFFERS CUSTOM CRAFTED
WINDOWS TO MEET YOUR NEEDS**

