



STEEL

WINDOWS & DOORS

PANDA
WINDOWS & DOORS

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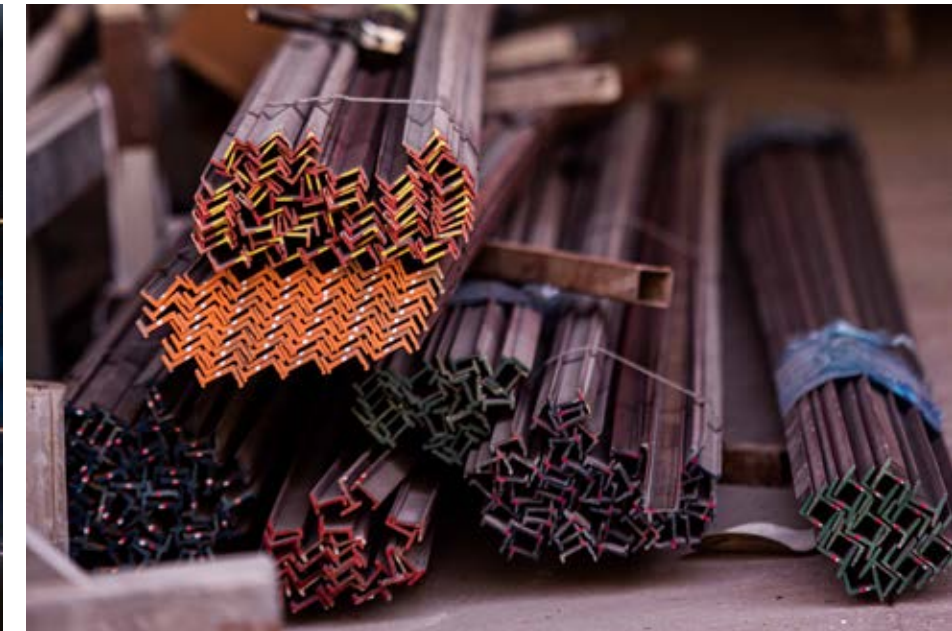
TUVAL
MINIMAL

PANDA

WINDOWS & DOORS

While Panda has been designing and fabricating aluminum windows and doors for over 30 years, when we opted to offer steel products to our discerning customers - we turned to the experts.

Panda Windows & Doors is proud to partner with the innovative team at Tuval Minimal to bring its steel windows and doors to the North American market.



TUVAL

MINIMAL

Tuval handcrafted windows are reminiscent of old-world Europe while offering technological advancements to 100% stainless steel.

Tuval Minimal has a 20-year reputation as the finest designer and supplier of premium steel-framed windows. Whether it be prestige homes, exclusive apartments, or boutique workspaces...

Tuval Minimal's expertise in steel windows has proven to hold the highest standard of design and quality.





WHEN DESIGN AND TECHNOLOGY MEET GLASS & STEEL

Since the days of Frank Lloyd Wright, forward-thinking architects and designers have been incorporating steel glass doors and windows into their projects to create a seamless transition to the outdoors.

The sleek, crisp lines of steel make a bold statement that inspires warmth, creativity, and innovation while delivering timeless elegance and sophistication. Whether designing a dream home, constructing a commercial enterprise, or refurbishing an older building, steel windows and doors offer durability and elegance that is simply unmatched.

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WHEN THE VIEW MATTERS

TIMELESS BEAUTY

Today steel is re-emerging as a sign of sophistication as architects and designers seek stronger windows, open views, and natural light for both commercial buildings and residences.

Tuval combines the timeless beauty and long-wearing durability of steel with cutting-edge finishes to create sustainable doors and windows that will not require replacement for generations to come.

NARROW SIGHTLINES

Expansive openings of steel and glass are perfect for enhancing natural views. The inherent strength of steel enables it to be molded in the thinnest profiles to unveil nearly unobstructed views.

Combining both function and form, Tuval's ultra-minimalist steel frames deliver elegance to both classic and modern architecture without compromising the view.



STRENGTH & FLEXIBILITY

STRONG & SECURE

There is simply no other option for window and door profiles that comes close to matching the strength and durability of steel. Tuval enhances the natural strength of steel further with technologically advanced and durable finishes.

The strength of steel offers the opportunity to stretch panels to massive dimensions to cover large spans with steel and glass. Steel windows and doors from Tuval also offer the strongest barrier against unwanted intrusion.

FLEXIBLE & CUSTOMIZABLE

As steel can be easily molded and rolled into any shape to offer nearly limitless design and configuration options, it's easy to see why steel is a favorite material to work with among architects and engineers.

Equally at home in both modern architecture and historic buildings, steel window and door configurations are limited only by the imagination.



UNMATCHED PERFORMANCE

ENERGY EFFICIENCY

Tuval offers a variety of profiles that deliver the structural integrity and energy efficiency of steel. Options include thermally-broken profiles to further reduce steel's inherent low thermal transmission.

Expansive openings of glass and steel can also help improve building energy efficiency by increasing daylighting, allowing in cooling breezes, and harnessing the sun's warmth with passive solar heating.

WEATHER PROTECTION

With state-of-the-art fabrication, durable finishes suitable for even coastal regions, and advanced thermally broken systems, Tuval offers weather protection for even the most extreme weather.



SUSTAINABLE STEEL FOR GREEN BUILDINGS

WASTE REDUCTION / SUSTAINABLE MANUFACTURING

Steel is 100% recyclable with a long life-cycle compared to other construction materials as windows and doors made from steel have endured for years thanks to their inherent strength. Tuval further enhances high-quality steel profiles with durable finishes to create sustainable doors and windows that are virtually maintenance-free and will last generations.

Steel production also creates minimal CO2 emissions, requires a relatively low amount of energy, is nontoxic and noncombustible, and creates minimal manufacturing waste.

OCCUPANT HEALTH / INDOOR AIR QUALITY

Connecting the natural world to the interior through biophilic design has been proven to improve the overall wellness of building occupants. Natural daylighting has been found to increase Vitamin D absorption, naturally boost productivity, lower fatigue, and improve immunity.

According to the EPA, many health problems caused by inadequate ventilation can easily be remedied by opening windows and doors to allow fresh air inside.

REGIONAL ENVIRONMENTS

Tuval's durable finishes combined with weather-resistant and thermally-broken systems are designed to handle even the most extreme weather. From snowy mountain regions to hurricane-prone areas, Tuval steel products can be configured to meet any weather demands.



THE TIVAL DIFFERENCE

Tival handcrafted windows are in high demand due to Tival's 20-year heritage reputation as the finest designer and supplier of premium steel-framed windows.

Tival's expertise in steel windows and doors has proven to hold the highest standard of design and quality.

Tival offers:

High-Quality Finishes. Advanced production & finishing processes include an exclusive hot zinc galvanizing method, ensuring durability for years to come.

Custom Solutions. Nearly limitless design options can be achieved regardless of the engineering hurdles faced.

Energy Efficient Profiles. Thermally-broken profiles deliver the structural integrity and energy efficiency of steel.

Slim Profiles & Narrow Sightlines. Combining both function and form, ultra-minimalist steel frames deliver elegance to both classic and modern architecture without compromising the view.



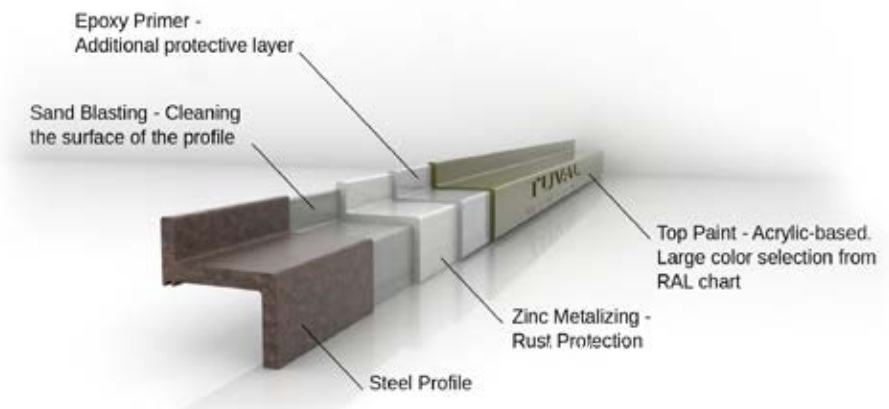
FABRICATION & FINISH

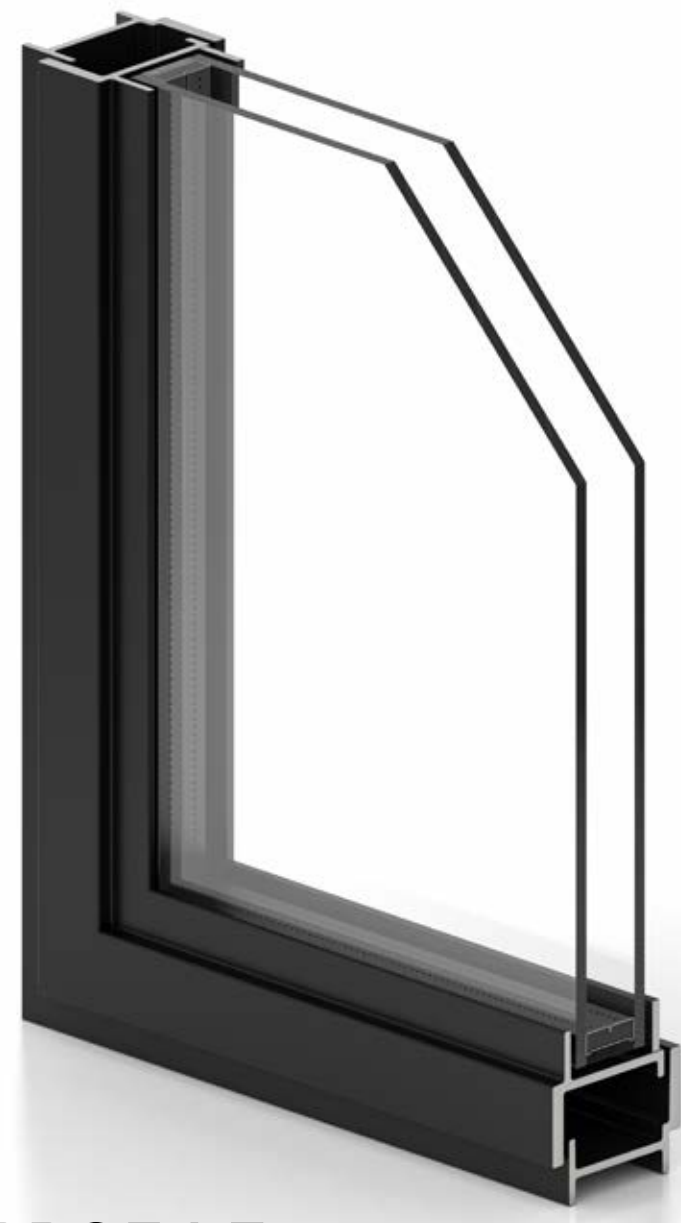
SUPERIOR RUST PROTECTION

Tuval only uses top-quality steel to fabricate strong steel windows and doors that are sustainably built to last. Tuval's precise fabrication and finish process ensures the finest level of finish, durability, and rust protection.

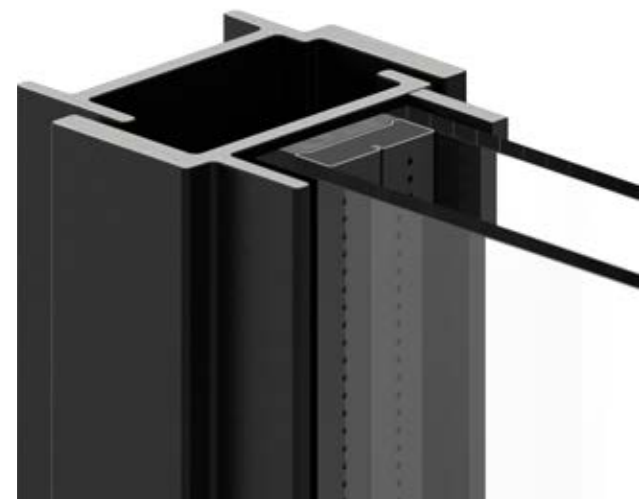
The first step in the process achieves a flawless raw finish through meticulous grinding and sandblasting. The frame is then immediately given a thick, protective coating of **Zinc Metallizing Spray** to protect the steel from corrosion and scratches. This advanced process allows for treatment of any size door or window and instantly seals the steel in an environmentally safe, rust-protective barrier.

The treated steel profiles are then given an epoxy-based, color-protective primer as an added layer of protection, followed by RAL wet paint finish and texture layer for a flawless finish that will last for generations.





W-40 PROFILE



HOT-ROLLED STEEL

Tuval's **W-40 Hot-Rolled Steel Profile** represents decades of modern technology advancements to legacy steel window profiles. Offering excellent acoustical and thermal performance, the W40 hot-rolled steel profile is favored by architects for its ultra-slim sightlines and strength.

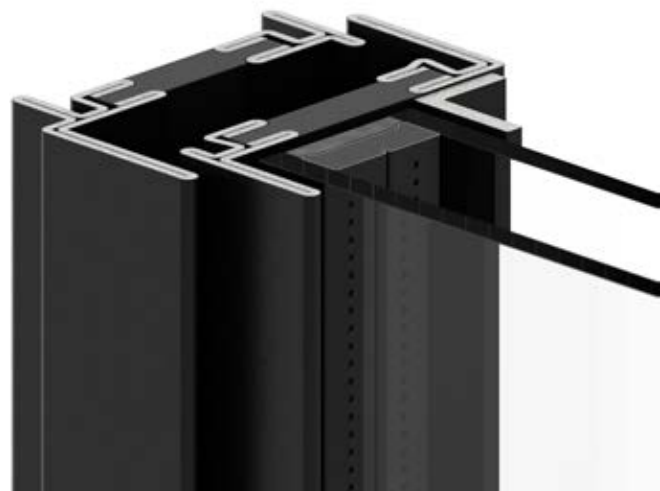
FEATURES & BENEFITS

- Solid hot-rolled steel profiles
- Classic "stepped leg" design
- Precision, hot-rolled steel profiles of 5 mm thickness
- Self-adhesive non-shrinking gaskets
- Accommodates double and triple glazing up to 37 mm
- Choice of different glazing beads
- Compatible with 16 mm friction hinges
- Classic or modern designs available in custom configurations and finishes.





W-50 PROFILE



THERMALLY BROKEN STEEL

Made from 1.5 mm top-quality steel joined with a high-density polyurethane insulator, Tuval's cold-rolled **W-50 Thermally Broken Profiles** offer the same thin profile and minimalist appearance as the W-40 Hot-Rolled Profile with added thermal performance.

Tuval's W-50 steel profile represents the most technologically advanced thermally-broken steel system available to meet today's extreme weather and high-efficiency demands.

FEATURES & BENEFITS

- Offers excellent thermal performance with a U-Factor of >0.3
- Most minimal thermally-broken steel profile available with dual rubber seals
- Offers similar narrow sightlines of W-40 Hot-Rolled Profiles
- High-density cast in polyurethane isolator
- Classic "stepped leg" design
- Mechanically fixed rebate gaskets
- Precision, cold-formed steel profiles of 1.5 mm thickness
- Profiles accommodate double and triple glazing up to 37 mm
- Choice of different glazing beads
- Compatible with 16 mm friction hinges
- Classic or modern designs available in custom configurations and finishes.



DESIGN YOUR OWN CONFIGURATION

Panel sizes available up to 42" wide and 120" tall.

Single-Leaf Casement Side Hung

Double-Leaf Casement Side Hung

Pair Single-Leaf Side Hung Windows with Fixed Center Window

Single-Leaf Side Hung Casement with Fixed Window

Single-Leaf Side Hung Casement with Mullions

Double-Leaf Side Hung Casement with Mullions

Double-Leaf Side Hung in Fixed Window with Mullions

Pair Single-Leaf Side Hung Windows Upper Top Hung Awning Window in Fixed Window with Mullions

Double-Leaf Side Hung Windows with Single-Leaf Door in Fixed Window with Custom Mullions

Double-Leaf Side Hung with Fixed Center and Lower Windows

Upper Top Hung Awning Window with Single-Leaf Door and Side Light



TUVAL STEEL WINDOWS

Tuval steel windows offer sleek lines and minimal profiles to deliver a minimalist aesthetic and powerful architectural appeal.

Tuval fabricates every window system according to exact design specifications. Choose from a variety of tracks, configurations, mullions, handles, glass, and finishes.

AVAILABLE WINDOW SYSTEMS

Casement
Casement windows feature full articulation and are able to swing in or out completely.

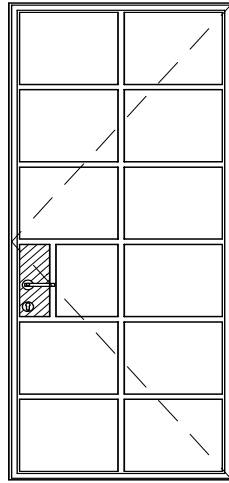
Awning
Awning windows are hinged at the top of the frame and are typically used as vents.

Hopper
Hopper windows are hinged at the base of the frame and are typically used as vents.

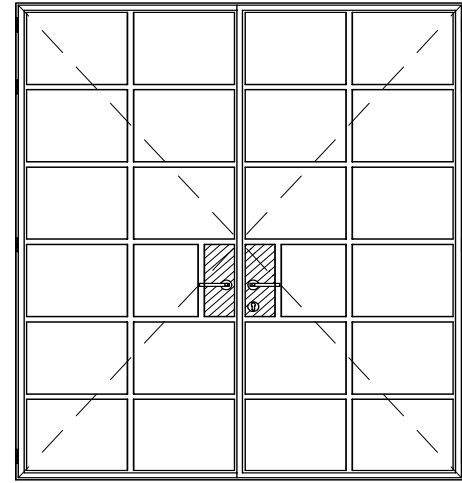
Fixed
Tuval window frames are available as fixed systems as a transom, sidelite, or picture window.

DESIGN YOUR OWN CONFIGURATION

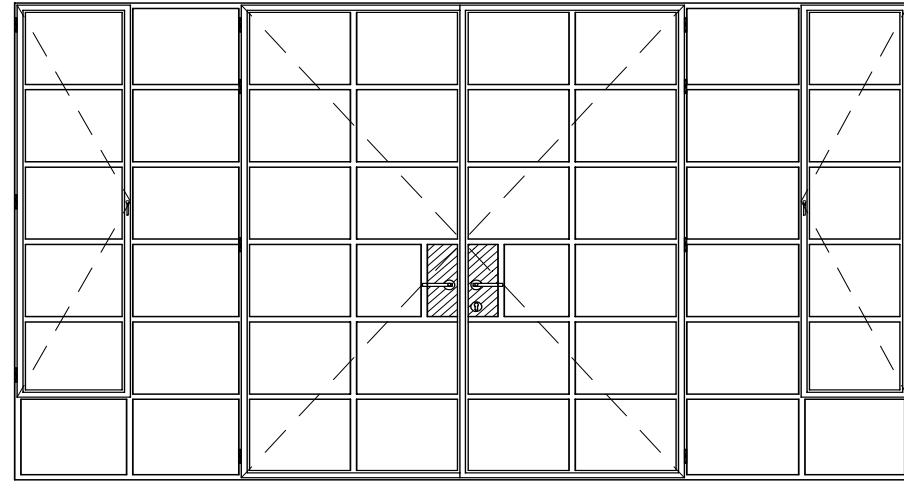
Panel sizes available up to 42" wide and 120" tall.



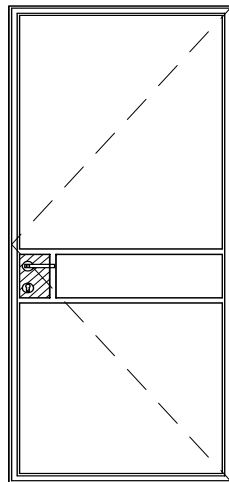
Single-Leaf Door with Mullions



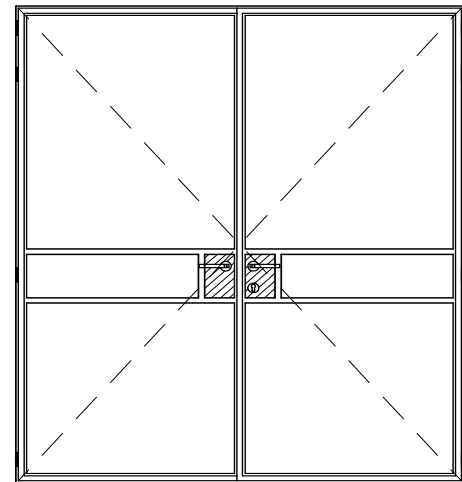
Double-Leaf Door with Mullions



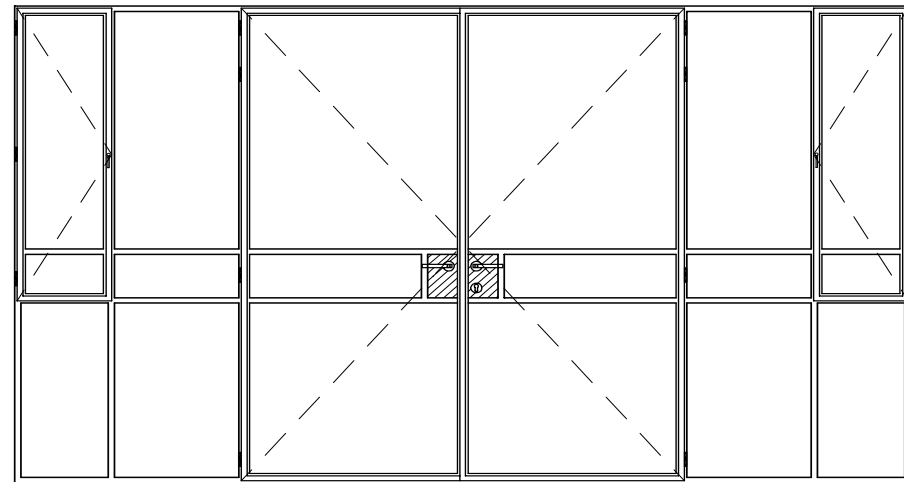
Double-Leaf Door and Side Lights with Pair of Single-Leaf Side Hung Windows with Mullions



Single-Leaf Door with Custom Mullions



Double-Leaf Door with Custom Mullions



Double-Leaf Door and Side Lights with Pair of Single-Leaf Side Hung Windows with Custom Mullions



TUVAL STEEL SWING DOORS

Tuval Swing Doors, also known as french or terrace doors, deliver performance with minimal sightlines and are designed to stand the test of time.

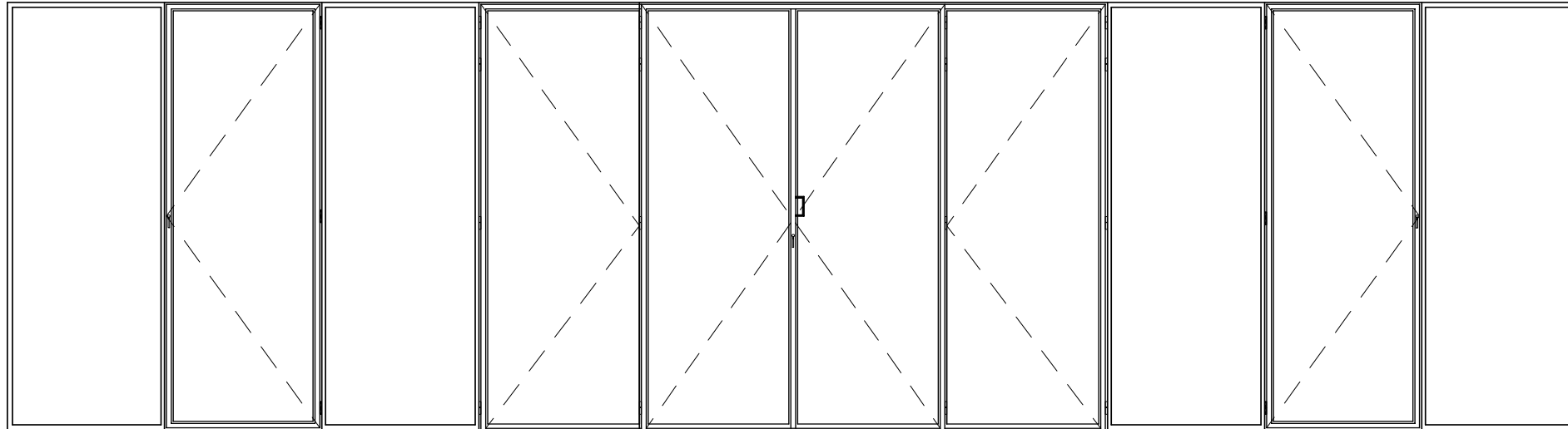
Tuval fabricates every door system according to exact design specifications. Choose from a variety of tracks, configurations, mullions, handles, glass, and finishes.

FEATURES & BENEFITS

- State-of-the-art engineering featuring W40 hot-rolled or W50 thermally-broken profiles make Tuval Doors remarkably durable – even with repetitive, daily use.
- Quality brass hardware and hinges are welded directly to the profile to support the weight of each panel.
- Clear open space can be maximized to 90% when fully open.
- Tuval steel profiles are protected against rust using Zinc-Metalizing Thermal-Spray.
- Multi-point locking mechanisms make Tuval Doors reliably durable and maximally secure against forced entry.
- Classic or modern designs available in custom configurations and finishes.

DESIGN YOUR OWN CONFIGURATION

Panel sizes available up to
42" wide and 120" tall.



Fixed and Folding Doors



TUVAL STEEL FOLDING DOORS

Also referred to as bi-fold doors or accordion doors, Tuval's innovative Folding Doors are available as in-or out-swing configurations and feature EPDM rubber seals for improved weatherability.

Tuval fabricates every door system according to exact design specifications. Choose from a variety of tracks, configurations, mullions, handles, glass, and finishes.

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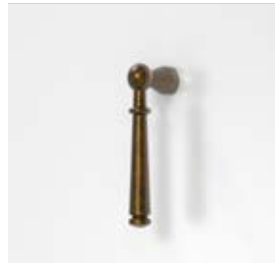
HANDCRAFTED WINDOW PULLS



Style A | Bronze Finish



Style A | Nickel Finish



Style B | Bronze Finish



Style B | Nickel Finish



Style C | Bronze Finish



Style C | Nickel Finish



Style D | Bronze Finish



Style D | Nickel Finish



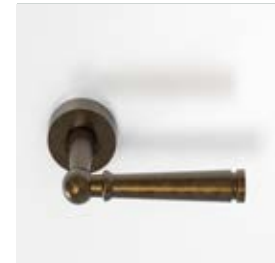
HANDCRAFTED DOOR PULLS



Style A | Bronze Finish



Style A | Nickel Finish



Style B | Bronze Finish



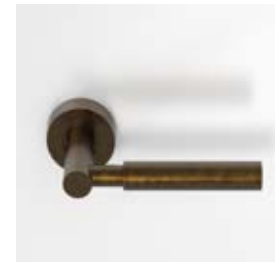
Style B | Nickel Finish



Style C | Bronze Finish



Style C | Nickel Finish



Style D | Bronze Finish



Style D | Nickel Finish



COLOR FINISHES

Tuval offers a variety of standard finishes as well as custom color options.

As part of Tuval's proprietary premium finish process, each steel profile is finished with a wet painted RAL color finish layer which is the optimal choice for steel window craftsmanship and guarantees a flawless finish.



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