Specification Guide

Door & Door Hardware
New Construction, Renovations
Replacements
2500 California Plaza
Omaha, Nebraska 68178
Ph. 402-280-2780
Fax 402-280-2691

March 2014
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Hollow Metal

Requirements

Exterior Frames
- 14 Gage Galvanized Steel
- Heavy Weight Hinge Reinforcement

Interior Frames
- 16 Gage Steel
- Heavy Weight Hinge Reinforcements

Exterior Doors
- 16 Gage Galvanized Steel
- Heavy Weight Hinge Reinforcement
- Must have Flush Top Cap
- Must Have 14 Gage Closer Reinforcement

Interior Doors
- 18 Gage Steel
- Must Have Heavy Weight Hinge Reinforcements
- Must Have 14 Gage Closer Reinforcement

Note: - All Doors/Frames Must Be Properly Reinforced
   For Surface Mounted Hardware
- All Doors/Frames Must Be From The Same Manufacturer
- All Frames To Be Welded Construction

Approved Manufacturers

Steelcraft, Curries
CONSTRUCTION NOTES:
1. Door opening size maximum:
   Single door opening size 5'0" x 11'0"
   (1524mm x 3353mm)
   Double door opening size 10'0" x 11'0"
   (3048mm x 3353mm)
2. Jamb depths (profile) availability:
   Single rabbit:
   minimum = 3" (76mm)
   maximum = 123/4" (324mm)
   Double rabbit:
   minimum = 43/4" (121mm)
   maximum = 143/8" (375mm)
3. Standard profile dimensions
   (variations available):
   Face = 2" (50mm)
   Stop = 9/16" (16mm)
   Returns = ½" (13mm) all frames
   except 5¼" (146mm) which
   is 3¾" (11mm)
4. Standard die-mitered corners:
   Four (4) concealed tabs interlocking
   head and jambs
GENERAL NOTES:

1. Frame profile - variations in jamb depths available in
   1/8" (3mm) increments:
   - Single rabbet – typically for walls less than 3½" (95mm) thick
     (2" min., [50mm])
   - Double rabbet – typically for walls 3½" (95mm) thick and over

2. Corner connections:
   - KD (knock-down) – Factory die-mitered
     Double rabbet frames – 4 tabs per miter
     Single rabbet frames – 3 tabs per miter
   - Corner Connections – SUA (set-up and welded)
     Available when specified, and in accordance with
     ANSI A250.8-1990.

3. 4" (102mm) heads – die mitered for use with 2" (50mm)
   face double rabbet jambs. Available when specified for KD or
   SUA applications.

4. Standard hardware preparations:
   Standard mortised and reinforced with mortar guards for:
   - Universal hinge preps – 4½" (114mm) patented
     preparation which allows easy and quick conversion from
     standard to heavy weight hinges.
   - Strikes – 4½" (124mm) conforming to ANSI A115.1
     and ANSI A115.2.

5. Rubber silencers: All frames are supplied with factory
   installed silencers to cushion the closing of the door and to
   eliminate the field problems related to installing the silencers
   after the frames are installed and grouted. Three (3)
   silencers per strike jamb and two (2) per double door head.
CONSTRUCTION NOTES:
1. Doors are 1 3/8" (45mm) thick.
2. Door opening size maximum:
   Single door opening size 4'0" x 10'0" (1219mm x 3048mm)
   Double door opening size 8'0" x 10'0" (2438mm x 3048mm)
3. Standard operating clearances (installed in frame):
   Head = 3/4" (19mm) to bottom of head or transom panel
   Hinge and lock side = 3/8" (9mm) to rabbet on jamb
4. Standard core system:
   1" (25mm) cell Kraft honeycomb core is laminated to both face sheets with
   contact adhesive. The honeycomb is phenolic resin impregnated and
   sanded to insure ultimate lamination and performance. To further enhance
   the structural stability of the door the honeycomb core material is subjected
   to several unique operations prior to assembly. If any of these operations
   are eliminated, the strength and durability of the door is compromised.
5. Hardware preparations: to meet specifications, doors can be prepared for
   all commercial mortised hardware, and can be factory reinforced for surface
   applied hardware applications:
   * Lock preps – details and dimensions shown are for cylindrical
     (ANSI 115.2) type locks. For mortise (ANSI A115.1) locks, the centerline
     of the lock is located 3/4" (9mm) lower.
6. Glass lites with Dezierner trim and louvers: doors with glazed cutouts
   and doors with louvers are available (see Lites and Louvers section of Spec
   Manual).
WOOD DOORS

Requirements

- All Wood Door To Be Plain Red Oak
- All Wood Doors To Have Matching Edges
- All Wood Doors To Have 5-Ply Construction

Approved Manufacturers

Marshfield, Algoma, VT Industries, Eggers Industries, Graham

* Full Lite Wood Doors Require An LSL Core  No Substitutions
Particleboard Core Doors
*Neutral Pressure* - NON-RATED (DPC-1) and 20-MINUTE (DFP-20)

<table>
<thead>
<tr>
<th>Product Features and Specifications</th>
<th>Interior Only (1)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Thickness</strong></td>
<td>1-3/4&quot; or 1-3/8&quot;</td>
</tr>
<tr>
<td><strong>Maximum Size</strong></td>
<td><strong>DPC-1</strong>:</td>
</tr>
<tr>
<td></td>
<td>Single: 40 x 10/0</td>
</tr>
<tr>
<td></td>
<td>Pair: 80 x 10/0</td>
</tr>
<tr>
<td></td>
<td><strong>DFP-20</strong>:</td>
</tr>
<tr>
<td></td>
<td>ITS-WH &amp; UL:</td>
</tr>
<tr>
<td></td>
<td>Single: 40 x 10/0</td>
</tr>
<tr>
<td></td>
<td>Pair: 80 x 10/0</td>
</tr>
<tr>
<td></td>
<td><strong>Double Egress</strong> Pair: 80 x 80 (2)</td>
</tr>
<tr>
<td></td>
<td><strong>1-3/8&quot;</strong>:</td>
</tr>
<tr>
<td></td>
<td>Single Only: 30 x 7/0</td>
</tr>
<tr>
<td><strong>Minimum Size</strong></td>
<td>0/8 x 1/10 (3)</td>
</tr>
<tr>
<td><strong>Faces</strong></td>
<td>Wood Veneer (5-Ply)</td>
</tr>
<tr>
<td></td>
<td>Decorative Laminates*</td>
</tr>
<tr>
<td></td>
<td>Medium Density Overlay (MDO)</td>
</tr>
<tr>
<td></td>
<td>Stylish Door Face</td>
</tr>
<tr>
<td><strong>Crossbands</strong></td>
<td>Engineered fiber. Standard construction is edgeband after decorative laminate face, no crossband is used (3-ply).</td>
</tr>
<tr>
<td><strong>Stiles</strong></td>
<td>If doors require edgeband before decorative laminate face, the crossband is used (5-ply).</td>
</tr>
<tr>
<td><strong>Top and Bottom Rails</strong></td>
<td>1-3/8&quot; LSL with veneer band or decorative laminate to match face (2) (4)</td>
</tr>
<tr>
<td><strong>Face Assembly Adhesive</strong></td>
<td>Type I (waterproof)</td>
</tr>
<tr>
<td><strong>Core Assembly Adhesive</strong></td>
<td>Type II (water-resistant)</td>
</tr>
<tr>
<td><strong>Core</strong></td>
<td>Particleboard (which complies with ANSI A208.1-LD-2)</td>
</tr>
</tbody>
</table>

**METAL VISION FRAMES OR WOOD MOLDING:**

**DPC-1:**
- (9) (10)
  - Total area of openings not to exceed 1,296 sq. in. of visible glass or one continuous dimension of 36" W or 54" H

**METAL VISION FRAMES OR WOOD MOLDING (11):**

**DFP-20:**
- (12) 1-3/4" Thickness: 1/4" wired glass only.
  - Total area of openings not to exceed 1,296 sq. in. of visible glass or one continuous dimension of 36" W or 54" H

**METAL VISION FRAMES (13):**

- (12) 1-3/4" Thickness: 3/16" Firelite NT glass only (14);
  - Total area of openings not to exceed 1,296 sq. in. of visible glass or one continuous dimension of 36" W or 54" H

**Warranty**

- Class 40 (17), highest security rating possible

**Acoustic Rating**

- STC 31 (Insoperable)

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(1) Use of Marshfield DoorSystems, Inc. doors in exterior applications is not recommended and not warranted.
(2) Fire retardant stiles eliminate the need for metal edge and astragal.
(3) Either the width or length dimension must be at least 22".
(4) 2 ply full outer stile available.
(5) Laminated Strand Lumber (LSL) or hardwood at mill option.
(6) Wider rails available.
(7) Bottom rails are a minimum 2-1/2" in doors requiring deep mortise machining for closers, holders, pivots, battemans, etc.
(9) Lites will be allowed up to 110" in length on DPC-1 doors but will not be covered by the Marshfield DoorSystems, Inc. warranty.
(10) Minimum 5" from lite to any edge and adjacent openings, including hardware cutouts.
(11) 1/4" wired glass is used in doors that are shipping to Canada or anywhere that requires hose stream testing. Trim-Lite™ molding is required.
(12) Minimum 5-1/2" from lite to any edge and adjacent openings, including hardware cutouts.
(13) All Metal 1IRM vision frame required.
(14) Metal vision frame is All Metal stamping 315-1 for ITS-WH and 117 or 1IRM for UL.
(15) All fire rated doors must be machined by Marshfield DoorSystems, Inc. or other approved fire door machinists.
(16) Factory machining of surface mounted exit devices with face holes 1" larger is available.
(17) All colors may not be available.
(18) Per UBC standard 4.1.1 and ASTM F-476.
# Marshfield Signature Series™

## Particleboard Core Doors

*Positive Pressure with Concealed Intumescent* (1) (2) - 20-MINUTE (DFP-20PP)

<table>
<thead>
<tr>
<th>Product Features and Specifications</th>
<th>Interior Only (3)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Thickness</strong></td>
<td>1-3/4&quot;</td>
</tr>
<tr>
<td><strong>Maximum Size</strong></td>
<td>ITS-WH &amp; UL:</td>
</tr>
<tr>
<td></td>
<td>Single: 4' x 10' /</td>
</tr>
<tr>
<td></td>
<td>Pair: 8' x 9' /</td>
</tr>
<tr>
<td></td>
<td>Double Egress Pair: 8' x 9' /</td>
</tr>
<tr>
<td><strong>Minimum Size</strong></td>
<td>0/8 x 1/10 (5)</td>
</tr>
<tr>
<td><strong>Faces</strong></td>
<td>Wood Veneer (5-Ply)</td>
</tr>
<tr>
<td></td>
<td>Decorative Laminate*</td>
</tr>
<tr>
<td><strong>Crossbands</strong></td>
<td>Medium-Density Overlay (MDO)</td>
</tr>
<tr>
<td></td>
<td><em>Style</em> Door Face</td>
</tr>
<tr>
<td><strong>Stiles</strong></td>
<td>1-3/4&quot; concealed intumescent positive pressure stiles with veneer band or decorative laminate to match face</td>
</tr>
<tr>
<td><strong>Top and Bottom Rails</strong></td>
<td>1-1/8&quot; Mill Option (6) (7) (8)</td>
</tr>
<tr>
<td><strong>Face Assembly Adhesive</strong></td>
<td>Type I (waterproof)</td>
</tr>
<tr>
<td><strong>Core Assembly Adhesive</strong></td>
<td>Type II (water-resistant)</td>
</tr>
<tr>
<td><strong>Core</strong></td>
<td>Particleboard (which complies with ANSI A208.1-1992-1)</td>
</tr>
<tr>
<td><strong>Maximum Size of Lite Openings</strong></td>
<td>9 (12)</td>
</tr>
</tbody>
</table>

### METAL VISION FRAMES or WOOD MOULDING (11):

- **DFP-20PP:** 1/4" wired glass only:
  - Total area of openings to exceed 1,296 sq. in. of visible glass or one continuous dimension of 36" W or 54" H

- **FIRE-TRIM (12) MOULDING:**
  - **DFP-20PP:** 5/16" Firelite® Plus glass only:
  - Total area of openings to exceed 1,296 sq. in. of visible glass or one continuous dimension of 36" W or 54" H

- **METAL VISION FRAMES:**
  - **DFP-20PP:** 3/16" Firelite® NT glass only (12):
  - Total area of openings to exceed 1,296 sq. in. of visible glass or one continuous dimension of 36" W or 54" H

### Other Detail Work (1-4)

- Finishing
- Machining
- Applied Mountings
- Glazing
- Clear or satin glass Environet UV® finish
- Prime only
- Opaque with flat glass topcoat

### Warranty

- Fully life of original installation (3)

### Security Rating

- Class 40 (16), highest security rating possible

### Acoustic Rating

- STC 31 (Inaudible)

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(1) Meets UBC 7-2 (97) Positive Pressure requirements.

(2) Frame mounted listed and approved gasket required for those doors to receive positive pressure 5" (Smoke) label.

(3) Use of Marshfield DoorSystems, Inc. doors in exterior applications is not recommended and not warranted.

(4) On pairs of doors, Perma S77 gasket used with concealed intumescent stiles eliminates the need for metal edge and astragal (M&E). Perma S77 gasket or M&E is required for pairs of doors to receive the positive pressure 5" (Smoke) label.

(5) Either the width or length dimension must be at least 22".

(6) Wilder rails available.

(7) Bottom rails are a minimum 2-1/2" in doors requiring deep mortise machinings for bottom rails.

(8) Laminated Strand Lumber (LSL) or hardwood at mill option.


(10) Minimum distance requirement is 5-1/2" from cutout to any edge and adjacent openings, including hardware cutouts.

(11) If 1/4" wired glass is used in doors that are shipping to Canada or anywhere that requires hose stream testing, Trim-Lite® moulding is required.

(12) 5/16" Firelite® plus glass required with Fire-Trim wood moulding.

(13) All Metal 115-1 vision frame required.

(14) All fire-rated doors must be machined by Marshfield DoorSystems, Inc. or other approved fire door machinings. Factory machining of surface-mounted exit devices with face holes 1" and larger is offered.

(15) All colours may not be available.

(16) Per UBC standard 43-1.1 and ASTM E-476.
Standard Lite Mouldings

Appendix A

Lite mouldings are installed on one side and the other side is precut for field installation after glazing. Mouldings are set for 1/4" glass or upon request for different glass thickness. Marshfield DoorSystems will factory glaze upon request. Lite mouldings are installed on one side and the other side is precut for field installation after glazing.

* On doors with cut-out only, Marshfield DoorSystems does not square out the corners of the cut-out.

Wood Lite Kits for Non-Rated and 20-Minute Rated Doors

Glazing compound/caulking must be used when installing glass.

ITS-WH and UL approved with 1/4" wired glass only and W-2, W-3, W-6, or W-7
True divided lites are available on non-rated doors using a 1/2" wide divider bar and W-2, W-3, W-6 or W-7 profiles.
Downset may vary due to allowable tolerance deviations in components. 1/4" lip on face on W-2, W-3, W-10

** Not available as 20-Minute Rated

Canada Trim-Lite™ Moulding for 20-Minute Rated Doors Requiring Hose Stream

Caulking required.

ITS-WH and UL approved with 1/4" wired glass only. Trim-Lite™ is only required on doors shipping to Canada or any Jurisdiction that requires hose stream testing.
Downset may vary due to allowable tolerance deviations in components.

Wood Fire-Trim System for 20-Minute Rated Doors.

Fire-Trim lite mouldings are for use with 20-minute positive pressure doors and structural composite lumber core neutral pressure doors. Fire-Trim lite mouldings are set for 5/16" FireLite® Plus glass thickness. Marshfield DoorSystems will factory glaze upon request.

ITS-WH and UL approved with 5/16" FireLite® Plus glass only.
Downset may vary due to allowable tolerance deviations in components.

Veneer Clad, Wood Wrapped or Metal Lite Kits for 90, 60 and 45-Minute Rated Doors

Metalcaulk caulking required for veneer clad lites over 100 sq. in. (Metalcaulk supplied by Marshfield DoorSystems)

Field Glazing Instructions for Non-Labeled and 20-Minute Rated Marshfield DoorSystems doors

- Apply a 1/8" to 1/4" bead of DAP Alex Plus Acrylic Latex Caulk Plus silicone in the corner made by the glass and the door core. This bead should be applied on both sides.
- Moulding should be installed with 16 gauge 2" finish nails. Nails should be placed 3" from the end of each moulding piece and at 6" intervals thereafter.

- Factory finished doors with applied mouldings, louvered or factory glazed lites will have nail holes filled.
- Doors to be glazed in the field will not have nail holes filled, even if the doors are factory finished.

Note: For more information on lite kits to be used with other glazing materials for rated and non-rated doors, please contact Marshfield DoorSystems Sales & Service Center.

IT-S-WH and UL approved with 1/4" wired glass only.
Downset may vary due to allowable tolerance deviations in components.

** Available in 1" increments only

Marshfield DoorSystems does not assume responsibility for the choice of glazing materials used. Refer to consumer Product Safety Commission 16 CFR 1201 CAT II (1-1-97 Edition) to determine the need for safety-rated glazing.
Information on Fire-Rated Doors

Appendix F

MINERAL CORE

Choosing the Right Fire-Rated Door

The rating of the fire door you need is determined by the local building code and the authority having jurisdiction. Marshfield Door Systems' fire-rated doors have successfully completed over 1,000,000 slams without failure tested per WDMA, TM-71.

Basic Requirements for Installing Fire-Rated Doors

1. Do not remove the classified label.
2. Install in accordance with Marshfield Door Systems Care & Handling Instructions and NFPA 80.
3. Install listed glass in approved site kits and carefully follow directions enclosed.
4. Install steel full-mortise but hinges by drilling 9/64" pilot holes and use #12 x 1-1/4" threaded-in-the-hold Type A2 screws in accordance with ANSI 80.6-1988. Install steel full-surface hinges, leaf plates, backplates and through bolts.

Hinges

The National Fire Protection Association Standard specifies that two hinges must be used for doors up to 60" in height. An additional hinge is required for each additional 30" in height or fraction thereof.

Closers

The Underwriters Laboratories Building Materials Directory catalogs a number of surface-type closers that may be used with labeled fire-rated doors. A surface-type closer is one that does not require the removal of wood except for fasteners. Coronado closers may not be used.

Surface-mounted hardware can be used on doors with inner blocking, without through bolts.

Installation Note

Surface mounted hardware, on mineral core doors, must be anchored on an inner blocked door using a No. 12 screw which penetrates the door by a minimum of 1-1/4", 9/64" pilot holes must be drilled the depth of the screw. Do not use combination screws.

No-Bolt Inner Blocking

The purpose of No-Bolt Inner Blocking is to attach surface hardware and exit devices with screws, thus eliminating through bolts on mineral core fire doors. It is not necessary to use No-Bolt inner blocking on Marshfield Door Systems fire doors where doors are machined for standard locks.

• Screw Withdrawal Exceeds 700 lbs. (tested per WDMA, TM-10).
• Options for No-Bolt Blocking*:

Note: Marshfield Door Systems, Inc. doors are manufactured per the standards listed on this page. Specifications are subject to change without notice.

AT Rails on Mineral Core Doors

"AT" stands for "Advanced Technology". The AT rail is a white, non-combustible material. There is no lumber or wood in an AT rail. Marshfield Door Systems uses AT rails for mineral core doors with the following approvals:

Agency Approvals

InterTek Testing Services – Wockworth Hersey and Underwriters Laboratories have authorized usage of:

- Magnetic switches listed for use on wood or composite 45-90 minute fire doors with 1-1/4" AT type rail
- Bottom seals listed for use on wood or composite 45-90 minute fire doors that are not longer than 1-15/16" deep and 15/16" wide with 3-1/4" AT bottom rails. Bottom seal must be installed with screws and silicone caulk.

Note: AT rails may be used on mineral core doors for other instances by request. They are not necessarily limited to use with magnetic switches and bottom seals. The AT rails can also be combined with No-Bolt inner blocking for doors that require greater than 5" blocking.

Multiple AT rails available in the following sizes: 2-1/4", 3-1/4", 4-7/16", 5".

Kickplates

Kickplates may be attached to the face of the door. The plate used must be an approved material (metal, high pressure laminate, PVC, or acrylic). The surface applied kickplate may be applied with screws or suitable adhesive.

The height is not to exceed:

• Up to 48" from the bottom of the door or 20-90 minute doors
• Acrylic Kickplates and PVC by InterTek can be the "full height" of the door for all ratings 20-90 minute, UL labeled only.

Fire-Rated Littke Systems

Underwriters Laboratories and InterTek Testing Services – Wockworth Hersey procedures require that openings be cut at the factory or by a licensed machinist and that approved lippage systems be used.

Marshfield Door Systems will factory glaze upon request. More than one lite opening per door is permitted. For the allowable combined area of the lite opening and limitations, see Appendix C, H and I. There must be at least 5-1/2 inches from lite to any edge and adjacent openings on any fire-rated door in order to retain a classified fire rating.

Independent Certification

The Marshfield Door Systems' fire-rated product line has been tested, rated and listed by InterTek Testing Services – Wockworth Hersey (ITS-WH) and Underwriters Laboratories (UL) in accordance with ASTM E-152-73, NFPA 252-73, UBC 43-2753, UL 108 and CAN-4-P104 with hose stream.

For Additional Information on Installation of Fire-Rated Doors

For more information on how to install fire-rated doors, see NFPA 80. For application information, see NFPA 101.

National Fire Protection
Association
80, Box 9101
1 Batterymarch Park
Quincy, MA 02269
or
Installation Guide for Doors
and Hardware
Door and Hardware Institute
7711 Old Springhouse Road
McLean, VA 22102

For More Information on Fire-Rated Doors

Underwriters Laboratories, Inc.
333 Pfingsten Road
Northbrook, IL 60062
708-272-8800
or
InterTek Testing Services –
Wockworth Hersey
8031 Murphy Drive
Middleton, WI 53562
608-836-4400

Note: Marshfield Door Systems, Inc. doors are manufactured per the standards listed on this page. Specifications are subject to change without notice.
Entrances & Storefronts

Requirements

- All Aluminum Door Finishes To Be Clear Anodized or Dark Bronze
- All Glass Type to be Solar Ban 60 #2 Surface
- All Glass Color to be Bronze Or Gray

Approved Manufacturers and Product

Curtain Wall: Kawneer 1600 UT System 1
Entrance Door: Kawneer 500 Wide Stile
Fixed Window / Store Front: Kawneer Trifab 451 UT

* Acceptable Substitution of Aluminum Framing, Doors, Window: Manco (use Comparable System)
350/500 Heavy Wall™ Entrances

Managing Heavy Traffic with Reliability, Strength and Protection that Lasts

Kohl Center, University of Wisconsin, Madison, WI
Architects: Hok Sport Facilities Group, Kansas City, MO; Venture Architects, Milwaukee, WI; Heinlein & Schrock, Kansas City, MO
Glazing Contractor: Lurie Glass Company, Milwaukee, WI

HIGH DURABILITY – 350/500 Heavy Wall™
HURRICANE RESISTANT – 350/500 Heavy Wall™ IR

Kawneer’s Medium Stile 350 and Wide Stile 500 Heavy Wall™ Entrance lines provide quality, durability and protection that lasts. The entrances were designed for heavy-traffic areas such as schools, universities and office buildings where traffic and motion create rigorous usage. 350/500 Heavy Wall™ Entrances have 3/16” (4.8 mm) walls throughout for additional strength and durability, and two framing options to provide a choice for designers. Additionally, the 350/500 Heavy Wall™ IR Entrances provide a solution for blast mitigation as well as offer hurricane resistance where they have been tested to meet the highest level of impact protection for entrances in the industry.

Performance
To resist both lever arm and torsion forces that constantly act upon any door, all 350/500 Heavy Wall™ Entrances feature four Sigma deep penetration and fillet welds plus mechanical fastening at each corner. In addition to the standard two-year warranty covering every Kawneer door, each door corner for the 350/500 Heavy Wall™ Entrances comes with a limited lifetime warranty, good for the life of the door under normal-use operation.
Aesthetics
Like all Kawneer entrances, 350/500 Heavy Wall™ Entrances offer classic lines and clean aesthetics and can blend into any type of architecture, whether traditional or modern, remodel or new construction. The door is 2” (50.8 mm) deep with 3-1/2” (88.9 mm) vertical stiles for the 350 Heavy Wall™ and 5” (127 mm) vertical stiles for the 500 Heavy Wall™ with a 6-1/2” (165.1 mm) bottom rail. A deeper 10-1/4” (260.4 mm) bottom rail is also available. Glazing infills range from 1/4” to 1” (6.4 mm to 25.4 mm). Muntins are optional and can be added to complement any design.

350/500 Heavy Wall™ Entrances provide a choice of framing: Trifab® VG (VersaGlaze®) 450 or 451 with 3/32” (2.4 mm) thickness for economical applications that do not require additional strength throughout the entire entrance. Alternatively, the Heavy Wall™ Trifab® VG framing with 3/16” (4.8 mm) wall thickness provides a solution for applications facing heavier traffic and substantial, or possibly abusive, usage.

Heavy Wall™ is a single-acting entrance with offset pivots, butt hinges or continuous geared hinges. The classic lines of 350/500 Heavy Wall™ Entrances push-pull hardware blend into any design.

Protective Glazing
350/500 Heavy Wall™ IR Entrances
Wind-borne debris, persistent rain and internal/external pressure changes are major causes of property damage and injury stemming from violent weather, and building codes in coastal areas often require enhanced safety for occupants. To meet these needs, 350/500 Heavy Wall™ IR Entrances have been rigorously tested to meet the forces of nature as well as human directed attacks.

These impact resistant entrances have been tested to meet TAS 201, 202 and 203 requirements of the Florida Building Code (FBC) as well as Level D requirements of ASTM E 1996. The entrances have also been tested to meet the even more stringent Level E (Enhanced Facilities) requirements of ASTM E 1996. For comprehensive safety assurance, 350/500 Heavy Wall™ IR Entrances have also been tested for blast mitigation per the requirements of ASTM F 1642.

For the Finishing Touch
Permanodic® anodized finishes are available in Class I and Class II in seven different color choices.

Painted finishes, including fluoropolymer, that meet or exceed AAMA 2605 are offered in many standard choices and an unlimited number of specially designed colors.

Solvent-free powder coatings add the green element with high performance, durability and scratch resistance that meet the standards of AAMA 2604.
1600UT (Ultra Thermal) Curtain Wall System™
1600UT System™1 / System™2

Ultra thermal.
Ultra value.
Ultra innovative.

With increasing energy costs and stringent code requirements, building owners, architects and glaziers need high-performing products that can help them stay ahead of codes. Kawneer’s 1600UT (Ultra Thermal) Curtain Wall System™ is an ultra innovative solution that raises the standards for pre-engineered performance. Built on the success of the flagship 1600 curtain wall platform, the 1600UT System™1 and 1600UT System™2 deliver high thermal performance, versatility, reliability and value. Both are stick fabricated, pressure glazed and ideal for low- to mid-rise commercial applications where high thermal performing façades are needed. 1600UT System™1 is an outside glazed, captured curtain wall system, while 1600UT System™2 is a Structural Silicone Glazed (SSG) curtain wall system. No matter the system, the end result is an ultra innovative, performance-driven, high-value curtain wall solution.

Setting the Standard in Thermal Innovation
For the utmost in energy efficiency, Kawneer’s 1600UT Curtain Wall System™ features an engineered polymer thermal separator and accommodates either double or triple insulating glass. Additionally, an optional fiberglass pressure plate can further enhance condensation resistance and thermal performance. 1600UT Curtain Wall System™ integrates seamlessly with other high thermal performing windows and doors from Kawneer to create a complete, advanced, thermally efficient solution for commercial buildings. The system is tested in accordance with North American performance standards, including seismic, thermal cycling and dynamic water.
Performance

Kawneer’s 1600UT Curtain Wall System™ is designed to proactively address code requirements, including the International Energy Conservation Code (IECC), ASHRAE/IESNA 90.1, 189.1 and state codes. Both 1600UT Curtain Wall Systems™ are capable of beating these code requirements with double- and triple-glazed configurations.

Each infill option offers two levels of performance ranges. These depend on pressure plate choice (aluminum or fiberglass) and system type. The fiberglass pressure plate option not only enhances thermal performance, but also improves condensation resistance.

Aesthetics

Kawneer solutions are widely respected for their ability to deliver optimum energy performance without compromising aesthetics. The innovative 1600UT Curtain Wall System™ is no exception. Kawneer designed the system to integrate many of the aesthetic and functional options found in the industry benchmark Kawneer 1600 Wall Systems®.

Among the aesthetic benefits of the versatile 1600UT Curtain Wall System™ is a unique design for the glass setting block chair, which allows for larger glass lites than other triple-glazed, high-performing curtain wall systems. Along with expansive glass sizes, the 1600UT System™2 offers a two-sided vertical SSG mullion solution that permits greater uninterrupted sightlines while providing enhanced thermal performance. To create flush and unbroken sightlines, both systems use concealed fasteners in their joinery construction.

Fabrication and Installation

The 1600UT Curtain Wall System™ minimizes installation time and effort in a number of ways:

- Installers can leverage their existing knowledge of Kawneer’s time-tested 1600 Wall System® 1 and System® 2 fabrication and installation methods.
- Straight cuts without notching simplify fabrication.
- A pre-engineered rain screen back pan option is available that uses easy-to-install spandrel adapters.

For the Finishing Touch

Architectural Class I anodized aluminum finishes are available in clear and color choices. Painted finishes, including fluoropolymer, that meet AAMA 2605 standards and solvent-free powder coatings that meet AAMA 2604 standards are available in a variety of color choices.
Features

- TRIFAB® 451UT is 4-1/2" deep with a 2" sightline
- Center Plane glass applications
- Flush glazed from either the inside or outside
- Screw Spline fabrication
- Dual IsoLock® lanced and debrided thermal break
- Infill options up to 1-1/8" thickness
- Permanodic® anodized finishes in 7 choices
- Painted finishes in standard and custom choices

Optional Features

- High performance sill flashing
- Acoustical rating per AAMA 1801 and ASTM E 1425
- Project specific U-factors (See Thermal Charts)

Product Applications

- Storefront, Ribbon Window or Punched Openings
- Single-span
- Integrated entrance framing allowing Kawneer standard entrances or other specialty entrances to be incorporated
- Kawneer windows or GLASSvent® are easily incorporated

For specific product applications,
Consult your Kawneer representative.
Windows

Requirements

- All Aluminum Window Finishes To Be Clear Anodized or Dark Bronze
- All Glass Type to be Solar Ban 60 #2 Surface
- All Glass Color to be Bronze Or Gray

Approved Manufacturers and Product

Operable / Vent Windows: Kawneer 8225 TL

* Acceptable Substitution Of Aluminum Framing: Manco (use Comparable System
Standard Features

- Heavy Commercial Grade Window
- IsoLock® Thermal Break
- Screw and Spline Frame Corner Joinery
- Factory Silicone Glazed
- Interior Applied Glazing Bead with Bulb Gasket
- Architectural Anodized Finishes and Applied Coatings
- Two Year Manufacturer's Warranty

For specific product applications, Consult your Kawneer representative.
### 8225TL IsoLock® Window

**FIXED WINDOW**

APRIL, 2011

EC 97911-29

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<table>
<thead>
<tr>
<th>CLASS and GRADE</th>
<th>Heavy Commercial F-HC100 / F-AW100</th>
</tr>
</thead>
<tbody>
<tr>
<td>TESTING STANDARD</td>
<td>AAMA / WDMA / CSA 101 / I.S. 2 / A440-05</td>
</tr>
<tr>
<td>FRAME DEPTH</td>
<td>2-1/4&quot; Overall Frame Depth</td>
</tr>
<tr>
<td>TYPICAL WALL THICKNESS</td>
<td>.090 and .125 Nominal</td>
</tr>
<tr>
<td>TYPICAL MAXIMUM SIZE</td>
<td>60&quot; x 99&quot;</td>
</tr>
<tr>
<td>TYPICAL MINIMUM SIZE</td>
<td>12&quot; x 12&quot;</td>
</tr>
</tbody>
</table>

**TYPICAL CONFIGURATIONS**

- Standard Infill Options: 1/4" and 1"
- Standard Hardware: Not Applicable
- Optional Hardware: Not Applicable

**OTHER OPTIONS**

- Unequal Leg Frames
- Exterior and/or Interior Applied Muntins
- Perimeters and Sills
- Exterior Pannings and Interior Trims
- Structural Mullions
- Vertically or Horizontally Stacked
- Access Panels and Blinds
- Silicone Field Glazing upon Request

<table>
<thead>
<tr>
<th>PERFORMANCE</th>
<th>Air Infiltration Cfm/ft²</th>
<th>Water Resistance PSF</th>
<th>Design Load PSF</th>
<th>Thermal Transmittance &quot;U&quot; Value</th>
<th>Condensation Resistance CRF</th>
<th>Sound Transmittance STC</th>
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<td>100</td>
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</table>

Note: Thermal values are based upon 1" clear insulating glass.
Standard Features

- Heavy Commercial Grade Window
- IsoLock® Thermal Break
- Mitered, Clipped and Staked Vent Corner Joinery
- Screw and Spline Frame Corner Joinery
- Factory Silicone Glazed
- Interior Applied Glazing Bead with Bulb Gasket
- Architectural Anodized Finishes and Applied Coatings
- Two Year Manufacturer’s Warranty
- Compatible with Storefront and Curtain Wall Systems

For specific product applications,
Consult your Kawneer representative.
**8225TL IsoLock® Window**

**PROJECT-IN WINDOW**

**EC 97911-29**

---

**CLASS and GRADE**

Heavy Commercial Grade AP-HC90 / AP-AW90

**TESTING STANDARD**

AAMA / WDMA / CSA 101 / I.S. 2 / A440-05

**FRAME DEPTH**

2-1/4" Overall Frame Depth

**TYPICAL WALL THICKNESS**

.090 and .125 Nominal

**TYPICAL MAXIMUM SIZE**

60" x 48"

**TYPICAL MINIMUM SIZE**

17" x 17"

---

**TYPICAL CONFIGURATIONS**

![Typical Configurations Diagram]

---

**STANDARD INFILL OPTIONS**

1/4" and 1"

**STANDARD HARDWARE**

Stainless Steel 4-Bar Hinges
Cast White Bronze Cam Locks

**OPTIONAL HARDWARE**

Access Control Locks
Limit Stop
Pole and Pole Ring

---

**OTHER OPTIONS**

Unequal Leg Frames
Exterior and/or Interior Applied Muntins
Insect Screens
Perimeters and Sills
Exterior Pannings and Interior Trims
Structural Mullions
Vertically or Horizontally Stacked
Access Panels and Blinds
Silicone Field Glazing upon Request

---

**PERFORMANCE**

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<th>Performance Type</th>
<th>Air Infiltration</th>
<th>Water Resistance</th>
<th>Design Load</th>
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<th>Condensation Resistance</th>
<th>Sound Transmittance</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>Cfm/ft²</td>
<td>PSF</td>
<td>PSF</td>
<td>&quot;U&quot; Value</td>
<td>CRF</td>
<td>STC</td>
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<td>15</td>
<td>90</td>
<td>.62</td>
<td>56</td>
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</tbody>
</table>

---

Note: Thermal values are based upon 1" clear insulating glass.
Laws and building and safety codes governing the design and use of glazed entrance, window, and curtain wall products vary widely. Kawneer does not control the selection of product configurations, operating hardware, or glazing materials, and assumes no responsibility therefor.

Kawneer reserves the right to change configuration without prior notice when deemed necessary for product improvement.

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**8225TL IsoLock® Window**

**PROJECT-OUT WINDOW**

For specific product applications, Consult your Kawneer representative.

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**Standard Features**

- Heavy Commercial Grade Window
- IsoLock® Thermal Break
- Mitered, Clipped and Staked Vent Corner Joinery
- Screw and Spline Frame Corner Joinery
- Factory Silicone Glazed
- Interior Applied Glazing Bead with Bulb Gasket
- Architectural Anodized Finishes and Applied Coatings
- Two Year Manufacturer's Warranty
- Compatible with Storefront and Curtain Wall Systems

---

**Project-out Window**

---
### 8225TL IsoLock® Window

**CLASS and GRADE**
Heavy Commercial Grade AP-HC90 / AP-AW90

**TESTING STANDARD**
AAMA / WDMA / CSA 101 / I.S. 2 / A 440-05

**FRAME DEPTH**
2-1/4" Overall Frame Depth

**TYPICAL WALL THICKNESS**
.090 and .125 Nominal

**TYPICAL MAXIMUM SIZE**
60" x 89"

**TYPICAL MINIMUM SIZE**
17" x 17"

### TYPICAL CONFIGURATIONS

- ![Window Configurations](image)

### STANDARD INFILL OPTIONS
1/4" and 1"

### STANDARD HARDWARE
Stainless Steel 4-Bar Hinges
Cast White Bronze Cam Locks
88SS Support Arm (Units over 50" in height)

### OPTIONAL HARDWARE
Access Control Locks
Hook Bolt Lock Handle
Pivot Shoe Roto-Operator
Scissors Arm Roto-Operator
Limit Stop
Pole and Pole Ring

### OTHER OPTIONS
Unequal Leg Frames
Exterior and/or Interior Applied Muntins
Insect Screens
Perimeters and Sills
Exterior Pannings and Interior Trims
Structural Mullions
Vertically or Horizontally Stacked
Access Panels and Blinds
Silicone Field Glazing upon Request

### PERFORMANCE

<table>
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<th></th>
<th>Air Infiltration Cfm/ft²</th>
<th>Water Resistance PSF</th>
<th>Design Load PSF</th>
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<td>15</td>
<td>90</td>
<td>.60</td>
<td>56</td>
<td>33</td>
</tr>
</tbody>
</table>

Note: Thermal values are based upon 1" clear insulating glass.
Standard Features

- Heavy Commercial Grade Window
- IsoLock® Thermal Break
- Mitered, Clipped and Staked Vent Corner Joinery
- Screw and Spline Frame Corner Joinery
- Factory Silicone Glazed
- Interior Applied Glazing Bead with Bulb Gasket
- Architectural Anodized Finishes and Applied Coatings
- Two Year Manufacturer’s Warranty
- Compatible with Storefront and Curtain Wall Systems
8225TL IsoLock® Window

INSWING CASEMENT WINDOW

April, 2011

EC 97911-29

CLASS and GRADE

Heavy Commercial Grade C-HC90 / C-AW90

TESTING STANDARD

AAMA / WDMA / CSA 101 / I.S. 2 / A 440-05

FRAME DEPTH

2-1/4" Overall Frame Depth

TYPICAL WALL THICKNESS

.090 and .125 Nominal

TYPICAL MAXIMUM SIZE

36" x 60"

TYPICAL MINIMUM SIZE

17" x 17"

TYPICAL CONFIGURATIONS

STANDARD INFILL OPTIONS

1/4" and 1"

STANDARD HARDWARE

Stainless Steel 4-Bar Hinges
Cast White Bronze Cam Locks

OPTIONAL HARDWARE

Access Control Locks
Limit Stop
Pole and Pole Ring
Butt Hinges
Friction Adjustor
Keyed Limit Arm

OTHER OPTIONS

Unequal Leg Frames
Exterior and/or Interior Applied Muntins
Insect Screens
Perimeters and Sills
Exterior Pannings and Interior Trims
Structural Mullions
Vertically or Horizontally Stacked
Access Panels and Blinds
Silicone Field Glazing upon Request

PERFORMANCE

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<th>Air Infiltration Cfm/ft²</th>
<th>Water Resistance PSF</th>
<th>Design Load PSF</th>
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<th>Condensation Resistance CRF</th>
<th>Sound Transmittance STC</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>.10 @ 6.24 psf</td>
<td>15</td>
<td>90</td>
<td>.58</td>
<td>52</td>
<td>n/a</td>
</tr>
</tbody>
</table>

Note: Thermal values are based upon 1" clear insulating glass.
Standard Features

- Heavy Commercial Grade Window
- IsoLock® Thermal Break
- Mitered, Clipped and Staked Vent Corner Joinery
- Screw and Spline Frame Corner Joinery
- Factory Silicone Glazed
- Interior Applied Glazing Bead with Bulb Gasket
- Architectural Anodized Finishes and Applied Coatings
- Two Year Manufacturer’s Warranty
- Compatible with Storefront and Curtain Wall Systems

For specific product applications, Consult your Kawneer representative.
825TL IsoLock® Window
OUTSWING CASEMENT WINDOW

<table>
<thead>
<tr>
<th>CLASS and GRADE</th>
<th>Heavy Commercial Grade C-HC90 / C-AW90</th>
</tr>
</thead>
<tbody>
<tr>
<td>TESTING STANDARD</td>
<td>AAMA / WDMA / CSA 101 / I.S. 2 / A 440-05</td>
</tr>
<tr>
<td>FRAME DEPTH</td>
<td>2-1/4” Overall Frame Depth</td>
</tr>
<tr>
<td>TYPICAL WALL THICKNESS</td>
<td>.090 and .125 Nominal</td>
</tr>
<tr>
<td>TYPICAL MAXIMUM SIZE</td>
<td>36” x 60”</td>
</tr>
<tr>
<td>TYPICAL MINIMUM SIZE</td>
<td>17” x 17”</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>TYPICAL CONFIGURATIONS</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>STANDARD INFILL OPTIONS</th>
<th>1/4” and 1”</th>
</tr>
</thead>
</table>

| STANDARD HARDWARE        | Stainless Steel 4-Bar Hinges |
|                         | Cast White Bronze Cam Locks |

| OPTIONAL HARDWARE        | Butt Hinges |
|                         | Access Control Locks |
|                         | Hook Bolt Lock or Multi-Point Lock |
|                         | Limit Stop |
|                         | Pole and Pole Ring |
|                         | Friction Adjustor |
|                         | Keyed Limit Arm |
|                         | Roto Operator |

| OTHER OPTIONS            | Unequal Leg Frames |
|                         | Exterior and/or Interior Applied Muntins |
|                         | Insect Screens |
|                         | Perimeters and Sills |
|                         | Exterior Pannings and Interior Trims |
|                         | Structural Mullions |
|                         | Vertically or Horizontally Stacked |
|                         | Access Panel and Blinds |
|                         | Silicone Field Glazing upon Request |

<table>
<thead>
<tr>
<th>PERFORMANCE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Air Infiltration Cfm/ft²</td>
</tr>
<tr>
<td>Water Resistance PSF</td>
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<tr>
<td>Design Load PSF</td>
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</tr>
<tr>
<td>Condensation Resistance CRF</td>
</tr>
<tr>
<td>Sound Transmittance STC</td>
</tr>
<tr>
<td>.10 @ 6.24 psf</td>
</tr>
</tbody>
</table>

Note: Thermal values are based upon 1" clear insulating glass.
Hinges

Requirements

- Hinges on new projects to be 3 knuckle type
- Use Fasteners Supplied By Manufacturer
- All hinges to be 626/652 dull chrome finish
- All hinges at exterior openings to have non removable pins

Number Of Hinges Per Door

2 Hinges Doors Up To 60" In Height
3 Hinges Doors Over 60" Up To 90"
4 Hinges Doors Over 90" Up To 120"

For Doors Over 120" Add 1 Hinge For Each Additional 30" Or Fraction Thereof

Approved Manufacturers

Hager, Stanley
### Full Mortise Hinges

**Plain Bearing • Standard Weight • Template**

*For use on Medium Weight Doors or Doors Requiring Low Frequency Service*

#### 700
- Steel with steel pin ANSI A8133

#### 800
- Brass with brass pin ANSI A2133
  - Stainless Steel with stainless steel pin ANSI A5133

Three knuckle non-rising removable pin with concealed pin and plug. Identical in appearance to Tri-Con bearing hinges except "AB" does not appear on leaf under Hager trademark. Specify screw requirements.

<table>
<thead>
<tr>
<th>Hinge Size</th>
<th>Gauge of Metal</th>
<th>Number of Holes</th>
<th>Screw Size</th>
<th>Quantity</th>
<th>Avg weight per case (lbs)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Inches</td>
<td>Millimeters</td>
<td></td>
<td>Machine</td>
<td>Wood</td>
<td></td>
</tr>
<tr>
<td>3½ x 3½</td>
<td>99 x 99</td>
<td>6</td>
<td>⅝ x 10-24</td>
<td>1 x 9</td>
<td>2 each 100 each 66 72</td>
</tr>
<tr>
<td>4 x 4</td>
<td>102 x 102</td>
<td>8</td>
<td>⅝ x 10-24</td>
<td>1½ x 12</td>
<td>3 each 48 each 45 47</td>
</tr>
<tr>
<td>4⅞ x 4</td>
<td>114 x 102</td>
<td>8</td>
<td>⅝ x 10-24</td>
<td>1¼ x 12</td>
<td>3 each 48 each 55 60</td>
</tr>
<tr>
<td>4⅞ x 4½</td>
<td>114 x 114</td>
<td>8</td>
<td>⅝ x 10-24</td>
<td>1½ x 12</td>
<td>3 each 48 each 55 60</td>
</tr>
<tr>
<td>5 x 6</td>
<td>127 x 102</td>
<td>8</td>
<td>⅝ x 10-24</td>
<td>1½ x 12</td>
<td>3 each 48 each 37 40</td>
</tr>
<tr>
<td>5 x 6½</td>
<td>127 x 114</td>
<td>8</td>
<td>⅝ x 10-24</td>
<td>1½ x 12</td>
<td>3 each 48 each 37 40</td>
</tr>
<tr>
<td>5 x 5</td>
<td>127 x 127</td>
<td>8</td>
<td>⅝ x 10-24</td>
<td>1½ x 12</td>
<td>3 each 24 each 37 40</td>
</tr>
</tbody>
</table>

### Concealed Bearing • Standard Weight • Template

*For use on Medium Weight Doors or Doors Requiring Medium Frequency Service*

#### AB700
- Steel with steel pin ANSI A8112

#### AB800
- Brass with brass pin ANSI A2112
  - Stainless Steel with stainless steel pin ANSI A5112

Three knuckle with concealed hinge bearings, non-rising removable pin, concealed pin head and plug. Specify screw requirements.

<table>
<thead>
<tr>
<th>Hinge Size</th>
<th>Gauge of Metal</th>
<th>Number of Holes</th>
<th>Screw Size</th>
<th>Quantity</th>
<th>Avg weight per case (lbs)</th>
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<tbody>
<tr>
<td>Inches</td>
<td>Millimeters</td>
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<td></td>
</tr>
<tr>
<td>3½ x 3½</td>
<td>99 x 99</td>
<td>6</td>
<td>⅝ x 10-24</td>
<td>1 x 9</td>
<td>2 each 100 each 66 72</td>
</tr>
<tr>
<td>4 x 4</td>
<td>102 x 102</td>
<td>8</td>
<td>⅝ x 10-24</td>
<td>1½ x 12</td>
<td>3 each 48 each 43 47</td>
</tr>
<tr>
<td>4⅞ x 4</td>
<td>114 x 102</td>
<td>8</td>
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<td>1¼ x 12</td>
<td>3 each 48 each 55 60</td>
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<td>114 x 114</td>
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<td>3 each 48 each 37 40</td>
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<td>8</td>
<td>⅝ x 10-24</td>
<td>1½ x 12</td>
<td>3 each 24 each 37 40</td>
</tr>
</tbody>
</table>

### Concealed Bearing • Standard Weight • Template • Wide Throw

*For use on Medium Weight Doors or Doors Requiring Medium Frequency Service*

#### AB700 – Wide Throw
- Steel with steel pin ANSI A8112

#### AB800 – Wide Throw
- Brass with brass pin ANSI A2112
  - Stainless Steel with stainless steel pin ANSI A5112

Three knuckle with concealed hinge bearings, non-rising removable pin, concealed pin head and plug. Specify screw requirements.

<table>
<thead>
<tr>
<th>Hinge Size</th>
<th>Gauge of Metal</th>
<th>Number of Holes</th>
<th>Screw Size</th>
<th>Quantity</th>
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</tr>
<tr>
<td>4⅞ x 5</td>
<td>114 x 127</td>
<td>8</td>
<td>⅝ x 10-24</td>
<td>1½ x 12</td>
<td>3 each 48 each 42 47</td>
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<tr>
<td>4⅞ x 6</td>
<td>114 x 152</td>
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<td>⅝ x 10-24</td>
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<td>3 each 48 each 42 47</td>
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<tr>
<td>4⅞ x 8</td>
<td>114 x 203</td>
<td>8</td>
<td>⅝ x 10-24</td>
<td>1½ x 12</td>
<td>3 each 42 each 42 47</td>
</tr>
<tr>
<td>5 x 6</td>
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<td>5 x 7</td>
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<td>8</td>
<td>⅝ x 10-24</td>
<td>1½ x 12</td>
<td>3 each 12 each 27 29</td>
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<td>5 x 8</td>
<td>127 x 203</td>
<td>8</td>
<td>⅝ x 10-24</td>
<td>1½ x 12</td>
<td>3 each 12 each 27 29</td>
</tr>
</tbody>
</table>

**Hinge testing conforms to ANSI A156.1. Furnished with screw hole locations that conform to standards approved by ANSI A156.7.**

**Hager Website: www.hagerhinge.com**

**"THE FIRST FAMILY OF SUPERIOR HARDWARE"**
# Full Mortise Hinges

**Concealed Bearing • Heavy Weight • Template**

*For use on Heavy Weight Door or Doors Requiring High Frequency Service*

**AB750**

Steel with steel pin ANSI A8111

**AB850**

Brass with brass pin ANSI A2111

Stainless Steel with stainless steel pin ANSI A5111

These knuckle concealed hinge bearings. Non-rising removable pin, concealed pin head and plug.

Specify screw requirements.

<table>
<thead>
<tr>
<th>Hinge Size</th>
<th>Gauge of Metal</th>
<th>Number of Holes</th>
<th>Screw Size</th>
<th>Quantity</th>
<th>Avg weight per case (lbs)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Machine</td>
<td>Wood</td>
<td>Rivet</td>
<td>Case</td>
<td>Steel</td>
</tr>
<tr>
<td>4 1/2 x 4 1/2</td>
<td>0.180</td>
<td>8</td>
<td>1 1/16 x 12-24</td>
<td>3 each</td>
<td>24 each</td>
</tr>
<tr>
<td>5 x 4 1/2</td>
<td>0.190</td>
<td>8</td>
<td>1 1/16 x 12-24</td>
<td>3 each</td>
<td>24 each</td>
</tr>
<tr>
<td>6 x 4 1/2</td>
<td>0.190</td>
<td>8</td>
<td>1 1/16 x 12-24</td>
<td>3 each</td>
<td>24 each</td>
</tr>
<tr>
<td>7 x 4 1/2</td>
<td>0.190</td>
<td>8</td>
<td>1 1/16 x 12-24</td>
<td>3 each</td>
<td>24 each</td>
</tr>
<tr>
<td>8 x 4 1/2</td>
<td>0.190</td>
<td>8</td>
<td>1 1/16 x 12-24</td>
<td>3 each</td>
<td>24 each</td>
</tr>
<tr>
<td>10 x 4 1/2</td>
<td>0.190</td>
<td>8</td>
<td>1 1/16 x 12-24</td>
<td>3 each</td>
<td>24 each</td>
</tr>
</tbody>
</table>

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# Concealed Bearing • Heavy Weight • Template • Wide Throw

*For use on Heavy Weight Door or Doors Requiring High Frequency Service*

**AB750 – Wide Throw**

Steel with steel pin ANSI A8111

**AB830 – Wide Throw**

Brass with brass pin ANSI A2111

Stainless Steel with stainless steel pin ANSI A5111

Three knuckle concealed hinge bearings non-rising removable pin, concealed pin head and plug.

Specify screw requirements.

<table>
<thead>
<tr>
<th>Hinge Size</th>
<th>Gauge of Metal</th>
<th>Number of Holes</th>
<th>Screw Size</th>
<th>Quantity</th>
<th>Avg weight per case (lbs)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Machine</td>
<td>Wood</td>
<td>Rivet</td>
<td>Case</td>
<td>Steel</td>
</tr>
<tr>
<td>4 1/2 x 5</td>
<td>0.180</td>
<td>8</td>
<td>1 1/16 x 12-24</td>
<td>3 each</td>
<td>24 each</td>
</tr>
<tr>
<td>4 1/2 x 6</td>
<td>0.180</td>
<td>8</td>
<td>1 1/16 x 12-24</td>
<td>3 each</td>
<td>24 each</td>
</tr>
<tr>
<td>4 1/2 x 7</td>
<td>0.180</td>
<td>8</td>
<td>1 1/16 x 12-24</td>
<td>3 each</td>
<td>24 each</td>
</tr>
<tr>
<td>4 1/2 x 8</td>
<td>0.180</td>
<td>8</td>
<td>1 1/16 x 12-24</td>
<td>3 each</td>
<td>24 each</td>
</tr>
<tr>
<td>5 x 6</td>
<td>0.190</td>
<td>8</td>
<td>1 1/16 x 12-24</td>
<td>3 each</td>
<td>24 each</td>
</tr>
<tr>
<td>5 x 7</td>
<td>0.190</td>
<td>8</td>
<td>1 1/16 x 12-24</td>
<td>3 each</td>
<td>24 each</td>
</tr>
<tr>
<td>5 x 8</td>
<td>0.190</td>
<td>8</td>
<td>1 1/16 x 12-24</td>
<td>3 each</td>
<td>24 each</td>
</tr>
</tbody>
</table>

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Hinge testing conforms to ANSI A156.1. Furnished with screw hole locations that conform to standards approved by ANSI A156.7.

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Ph. 1-800-325-9995 or 1-314-772-4400 • Fax 1-800-782-0149 or 1-314-772-0744

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