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HOLLOW METAL WORK - A BRIEF HISTORY

Hollow metal work was introduced into the building and construction industry early in the Twentieth Century according to records indicating it's beginning in the Jamestown, New York area. Emphasis for this new development was motivated by the great fires in Baltimore and San Francisco in an attempt to reduce the flammability of wood construction.

Initially, doors and frames were constructed of wood with thin gauge metal encasement to deter flammability. Further development resulted in basic self supporting steel doors, eliminating the wood core. This was introduced by the Dahlstrom Metallic Door Company in their catalog of 1909. Other 1909 catalogs showed stile and rail hollow metal doors with no structural wood core and incorporating glass or metal panels.

The first steel frames appeared in the Dahlstrom catalog in 1915 as "Special Frames for Hospital Doors". These were of 12 gauge and 16 gauge formed steel with faces fitting flush with the wall surface. Wood trim could be applied if desired. A few other manufacturers, in 1915, offered press formed steel frames, but generally the three piece frame with separately applied trim was still predominant.

Both doors and frames were prepared for hardware from templates and the range of trim styles covered a great many ornate designs. One manufacturer, for example offered 200 different design options. By comparison, with the era of standardization we have today, this design freedom has given way to the standard 2" wide face frame.

The origin of the flush hollow metal door is believed to be around 1915 when again the Dahlstrom Catalog offered a door with no recessed panels. It was not until 1930 that the use of Z-BAR, channel and truss cores appeared as relatively standard methods of supporting door "skins" or face sheets. These methods were enhanced with the growing development of electrical arc and spot welding.

The building boom following World War II prompted the introduction of stock steel doors and frames, with their usage steadily increasing until today when they have become generally accepted in place of wood products for their fire resistance as well as appearance, strength and durability. Also the ecological need for wood conservation as well as the continual development of electronically controlled manufacturing equipment have enhanced the usage of steel and hollow metal products giving the architect an increasingly wider variety of design options.

REFERENCE: National Association of Architectural Metal Manufacturers
"Hollow Metal Technical and Design Manual"

GLOSSARY OF TERMS

Definitions of common terms pertaining to Hollow Metal Doors and Frames

NOTE: Similar Terminology noted in parenthesis

ACTIVE DOOR (Active Leaf)

The first operating door of a pair; usually that one in which a lock, if any, is installed.

ANCHOR

A device used to anchor frame to surrounding structure.

Adjustable Base Anchor (Floor Strut) (Floor Stilt)

An adjustable device used to hold frames above a finished floor.

Base Anchor (Floor Anchor) (Base Clip)

Metal piece attached to base of frame to secure frame to the floor, either fixed or adjustable.

Base Anchor Extension (Floor Anchor Extension)

Metal angle attached to the base of a frame with the horizontal leg extending beyond the frame back bend. Used to facilitate the use of power tools in attachment of frame to floor.

Existing Opening Anchor

Metal piece inside throat of frame for reinforcing when frame is secured in an existing wall using screws and expansion shields.

Jamb Anchor

Metal device inserted in or attached to the back of a frame jamb to anchor frame to the wall.

Masonry: Used in masonry walls.

Stud: Used with steel or wood stud walls.

ANTI-PANIC HARDWARE

See Panic Hardware.

ASTRAGAL

A member or combination of members applied to one or both doors of a pair at their meeting edges to close the clearance gap for the purpose of providing either a weather seal, minimizing the passage of light or retarding the passage of smoke or flame during a fire.

Mortised Astragal

A two-piece astragal having one part recessed in the edge of each door.

Overlapping Astragal

A one piece astragal attached to one door only and overlapping the other door when in the closed position.

GLOSSARY OF TERMS (CONTINUED)

ASTRAGAL (continued)

Split Astragal

A two-piece astragal, one piece of which is surface mounted on each door and provided with a means of adjustment to abutt the other piece and provide a seal.

BACKBEND (backband) (return)

The return face to the wall, at the outer edge of frame trim or face.

BACKBEND RETURN

Turned in edge of backbend of frame.

Flush Bolt Backset

Distance from vertical centerline of leading edge of a door to the centerline of the bolt.

Hinge Backset

On a door, the distance from the stop face, or narrow side to the edge of the hinge cut-out.

On a frame, the distance from the stop to the edge of the hinge cutout.

Lock Backset

The distance from the vertical centerline of the leading edge of a door to the centerline of the lock cylinder, measured horizontally and parallel to the door face.

Strike Backset

On a door frame, the distance from the stop to the edge of the strike cut-out.

BASE (sill)

That member of a sidelite frame which extends along the floor to form a base.

BASE ANCHOR EXTENSION

See anchor.

BEVELED EDGE

Edge of a door which is beveled (standard 1/8 inch in 2 inches) to provide clearance with strike jamb or adjacent door of a pair of doors as the door is closed.

BEVELED SQUARE EDGE

Edge of a door which is beveled only at the corners for clearance in swinging. The center portion of the edge is at a 90 degree angle to the door face for lock mortising.

BLANK JAMB

See jamb.

BORROWED LITE (light)

A window frame for use in an interior partition.

BORROWED ARM

The arm mechanism attached to the bottom rail of a door and connected to the spindle of the door closer or pivot.

BOTTOM RAIL

Horizontal rail at the bottom of a door connecting lock stile to the hinge stile.

GLOSSARY OF TERMS (CONTINUED)

BULL NOSE EDGE

Edge of a door with a large radius to provide clearance for swinging in both directions.

BULL NOSE TRIM

The face of a jamb having a least a 1/4" radius rather than a sharp 90 degree bend at the edge next to the door opening.

BUTT

Abbreviation for a Butt Hinge.

BUTT HINGE

A type of hinge which has rectangular leaves, usually of the same size, and multiple bearing contacts.

BUTT-HUNG DOOR

A door hung on butt hinges.

BUTTED FRAME

A frame which fits against the wall structure rather than around it. Frame depth is normally equal to or less than the wall thickness.

CABINET JAMB

Frame in three or more pieces applied as the finished frame over a rough buck.

CASED OPENING

An interior wall opening which has a frame with trim but no stops and contains no door or window.

CEILING STRUT

An adjustable frame member extending vertically from the head of a door frame to a rigid support above to hold the frame in place.

CENTER-HUNG DOOR

A door hung on center pivots

CENTER PANEL

Portion of a door between hinge and lock stile.

CENTER PIVOT

Swing door hardware having its pivot axis on the thickness centerline of the door and normally located about 2 3/4" from the hinge jamb.

CENTER RAIL

Horizontal rail in a door usually located at lock height used to separate upper and lower panels of a recessed panel type door.

CHECK

See door closer

CLOSER

See door closer

CLOSER REINFORCING

A metal plate reinforcement in a door or a door frame to provide additional strength for the attachment of a door closer.

Corner Bracket

Bracket connected to door frame jamb and head at upper hinge corner to support exposed overhead closer. Used on out swinging doors only.

GLOSSARY OF TERMS (CONTINUED)

CLOSER REINFORCING (continued)

Full Sleeve

Formed plate which reinforces soffit, rabbet and both faces of a frame.

Half Sleeve

Formed plate which reinforces soffit, one rabbet and one face of a frame.

COMMUNICATING FRAME

A double rabbeted frame with both rabbets prepared for single swing doors. Doors swing in opposite directions and may be of same or opposite hand.

COMPLETED OPENING ANCHOR

See Anchor, Existing Opening.

COMPOSITE METAL FACE CONSTRUCTION

A door constructed of a solid core bonded to a metal facing.

COORDINATOR

A mechanism which controls the order of closing of a pair of swing doors; used with doors equipped with overlapping astragals and certain panic and fire exit hardware which requires one door to close ahead of the other.

CORE

The interior construction of a hollow metal door.

CORNER REINFORCEMENT

Reinforcing at junction of head and jamb used in interlocking of knock-down (K.D.) or welded frames.

CORNER POST

Vertical closed frame section used at the corner connection of two or more frames mounted on adjacent perpendicular walls.

COVEMOLD FRAME

Frame having exposed contour faces simulating contour of wood frame.

COVER PLATE

A finish plate used to cover the exposed face of either a floor closer not covered by the threshold or a closer mounted in the head of a door frame.

CRASH BAR (panic bar)

Housing at either end of a crash bar which is mounted on the surface of a door.

CUT-OFF STOP (Terminated Stop) (Hospital Stop)

A door frame stop which terminates above the floor line and has a closed end.

CUT-OUT

A preparation for hardware and/or accessories in a door or frame.

GLOSSARY OF TERMS (CONTINUED)

CYLINDRICAL LOCK PREPARATION

Preparation in a door to accept a cylindrical lock.

DEADLATCH

A latch having an auxiliary feature which prevents its retraction by end pressure when in the projected position.

DEADLOCK

A lock in which a bolt is moved by means of a key or thumbturn, and is positively stopped in its projected position.

DOOR CLEARANCE

The space between door and frame rabbet, between door and finished floor (see also Undercut), or between meeting edges of pairs of doors.

DOOR CLOSER (Check) (Closer)

A device or mechanism to control the closing of a swing door; may be overhead or floor mounted and either exposed or concealed.

DOOR LITE

The glass area in a glazed door.

DOOR OPENING

The opening dimension of a doorway, measured between jamb rabbets and from floor line to head rabbet. The opening size is usually the “nominal” door size, and is equal to the “actual” door size plus clearance and threshold height.

DOOR SIZE, ACTUAL

The actual size of the door leaf itself.

DOOR SIZE, NOMINAL

See Door Opening.

DOUBLE ACTING DOOR

A door with hardware which permits it to swing to either side of the plane of its frame.

DOUBLE BEVELED EDGE

A frame prepared for one or two double acting doors.

DOUBLE BEVELED EDGE

An edge of a door beveled from the center toward each face of the door.

DOUBLE EGRESS FRAME

A door frame prepared to receive two single-acting doors swinging in opposite directions, both doors being of the same hand.

DOUBLE EGRESS MULLION

Mullion used to divide pairs of doors in some types of double egress frames.

DOUBLE RABBET FRAME

A frame having two rabbets on opposite sides of the stop.

DOUBLE SWING FRAME

A frame prepared to receive a pair of single-acting doors, both of which swing in the same direction.

GLOSSARY OF TERMS (CONTINUED)

DRYWALL FRAME

A knocked-down (K.D.) door frame designed for installation in a wall constructed with studs and gypsum board or other dry sheet facing material after the wall is erected.

DUST COVER BOX

A metal cover attached to a frame behind reinforcement for any mortised or recessed hardware, to prevent mortar or plaster from entering the mounting holes.

DUTCH DOOR

A door consisting of two separate leaves, one above the other, which may be operated either independently or together, the lower leaf usually having a service shelf at its top edge.

DUTCH DOOR FRAME

A frame prepared for a dutch door.

END CAP

Inserted part used to provide flush condition on top and bottom of a hollow metal door.

END CHANNEL

Horizontal channel welded into the top and bottom of a hollow metal door for stiffening and rigidity.

FACE (Trim)

Exposed part of a frame parallel to face of wall.

FILLER PLATE

A metal plate used to fill unwanted mortise cut-outs in a door or frame (see also Hinge Filler).

FIRE EXIT HARDWARE

An exterior door locking mechanism which is designed to be always operable from inside the building by pressure on a crash bar or lever, and which bears a U.L. label certifying its suitability for use on fire-rated emergency exit doors. Such hardware may be either:

- a) Mortise type, having the lock mechanism mortised into the edge of the door or concealed within the door,
- b) Rim type, having the lock mechanism mounted on the interior face of the door,
- c) Vertical Rod type, surface or concealed, having the latches in or on the top and/or bottom of the door and activated by the crash bar through a rod linkage extending vertically on or in the lock stile of the door.

FIXED TRANSOM

Panel or glass lite above door opening which is inoperable.

FLOOR CLEARANCE

The width of the space between the bottom of a door and the finished floor or threshold.

GLOSSARY OF TERMS (CONTINUED)

FLOOR CLOSER (Floor Check) (Floor Hinge)

A door-closing device which is installed in a recess in the floor below the door to regulate the opening and closing of a swing door.

FLOOR PIVOT

A center or offset pivot located at the floor or threshold.

FLOOR STILT

An anchoring device attached to a door frame jamb to hold the bottom of the frame above the finished floor level.

FLOOR TO CEILING UNIT

An assembly with door and fixed panel above, no transom bar between. Design of panel makes it appear to be extension of door.

FLUSH BOLT

A rod or bolt which is mounted flush with the edge or face of the inactive door of a pair, to lock the door to the frame at the head and/or sill. When mounted in the edge, operation is by means of a recessed lever. See Surface Bolt.

FLUSH DOOR

A door having flush surfaces, with no glass lights, louvers and grilles.

FLUSH PANEL-TYPE DOOR (Stile and Panel Construction)

A type of door consisting of one center panel and one lock stile and one hinge stile. Stiles are butted against the panels the full length of the door horizontally stiffened with U-shaped end closures. Panels interlock with the stiles, or are joined to the stiles by internal welding and are stiffened by a suitable method in accordance with the manufacturer's standard practice. Surface of panels and stiles lie in parallel planes, but panels may be recessed an amount equal to the thickness of the stile metal.

FLUSH PANEL-TYPE DOOR (Stile and Rail Construction)

A type of door using stiles and rails either mitered or butted, the corner joints being welded and ground smooth. Panels interlock with the stiles and rails and are stiffened by internal reinforcing. Joint lines between the panels, stiles and rails may be left visible. Surface of panels and stiles lie in a parallel plane. The panels may be recessed an amount equal to the thickness of the stile metal.

GLASS STOP

A glazing bead which is either applied to, or is an integral part of, a window frame.

GLAZING BEAD

A formed metal section used to secure glass in a window opening.

GLOSSARY OF TERMS (CONTINUED)

GRILLE

See Louver.

GUSSET

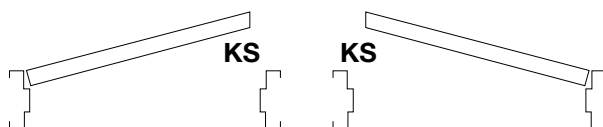
See Corner Reinforcement.

HAND (of door)

A term used to designate the direction of a door swing. When viewed from the exterior side of the door, if the hinge edge is at the left, the swing is left hand if the door swings away from the viewer; left hand reverse bevel if it swings toward the viewer. If the hinge edge is at the right, the swing is right hand if the door swings away from the viewer; right hand reverse bevel if it swings toward the viewer.

HANDING DETAILS

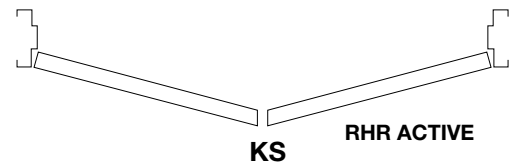
KS — INDICATES KEY SIDE



EXTERIOR SIDE

LH—LEFT HAND SWING

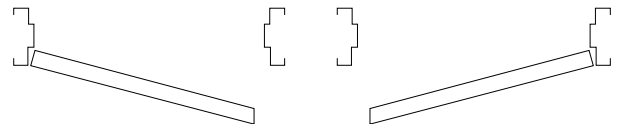
RH—RIGHT HAND SWING



DOUBLE SWING FRAME

LHR—LEFT HAND
REVERSE SWING

RHR—RIGHT HAND
REVERSE SWING



EXTERIOR SIDE

KS

KS

HEAD OR HEADER

The horizontal member which forms the top of a frame.

HEAD STIFFENER

A heavy gage angle or channel section placed inside of, and attached to, the head of a wide door frame to maintain its alignment, not to be used as a load-carrying member.

HINGE FILLER

Small removable trim part located between hinge leaf and hinge reinforcements. Its position can be reversed to accommodate change of door handing.

HINGE BACKSET

See Backset, Hinge

HINGE JAMB

See Jamb.

HINGE REINFORCEMENT

A metal plate attached to a door or frame to receive a hinge.

HINGE SIDE (Wide Side)

The face of a door which is opposite to that which contacts the frame stops.

HOSPITAL FRAME

A frame with cut-off or terminated stops.

HOSPITAL STOP

See Terminated Stop or Cut-off Stop.

GLOSSARY OF TERMS (CONTINUED)

INACTIVE DOOR OR LEAF

That leaf of a pair of doors which does not contain a lock but is secured, when closed, by top and bottom bolts and contains a strike to receive the latch or bolt of the active leaf.

INTERCONNECTING FRAME

See Communicating Frame.

IMPOST

See Mullion.

JAMB

The vertical member forming the side of a frame.

Blank Jamb

A jamb which has not been prepared to receive hardware.

Hinge Jamb

The jamb at which hinges or pivots are installed.

Strike Jamb

The jamb at the leading edge of a door, in which a strike may be installed.

JAMB ANCHOR

See Anchor.

JAMB DEPTH

Overall outside dimension of frame section measured from face surface to face surface.

JAMB EXTENSION

That section of a jamb which extends below the level of the finish floor for attachment to the rough floor.

KEYED-IN-FRAME

Frame erected with plaster or mortar forced behind frame backbend. Wall thickness is equal to or greater than frame throat, but no wider than frame depth.

KEY SIDE (of door)

Side of door which receives the lock key.

KICKPLATE

A metal plate applied to the face of the lower rail of a door or sidelight to protect against abrasion or impact loads.

KNOCKED DOWN

A term used in reference to any product that is shipped disassembled, for assembly at the building site: commonly abbreviated "KD".

LABELED DOOR OR FRAME

A door or frame that conforms to all applicable requirements, in respect to fire resistance, of a nationally recognized testing authority and bears its label designating the fire rating.

LATCH

A hardware mechanism having a spring-activated beveled-end bolt, retractable by a knob or lever handle, but no locking device; used to hold a door in its closed position. See also Deadlatch.

GLOSSARY OF TERMS (CONTINUED)

LEADING EDGE

That vertical edge of a swing door which is opposite the hinge edge; same as Lock Edge or Strike Edge.

LEAD-LINED DOOR OR FRAME

A door or frame which is lined with sheet lead to prevent radiation penetration.

LEAF

An individual door, used either singly or in multiples.

LOCK EDGE

See Leading Edge.

LOCK FACEPLATE

The exposed plate which sets in the edge of a door to cover a lock mechanism; also referred to as a "lock front".

LOCK BACKSET

Distance from centerline of lock front to centerline of cylinder or knob.

LOCK JAMB

Also referred to as Strike Jamb. See Jamb.

LOCK REINFORCEMENT

Plate(s) to which lock is attached. Used to provide additional strength at preparation for lock in door.

LOUVER

An opening in a door with a series of slats, blades or piercings to allow the passage of air.

MASONRY ANCHOR

See Anchor, Masonry.

MASONRY GUARD

See Dust Cover Box.

MORTISE PREPARATION

Reinforcing, drilling and tapping for hardware which is to be mortised into door or frame.

MULLION

A vertical member within a frame, separating either doors, a door and sidelights, glazed areas or panels. Mullions between two doors of a pair may be either fixed or removable.

MUNTIN

A bar member supporting and separating panes of glass within a door, sash or glazing frame.

MUTE

A part attached to the stop on a frame to cushion the closing of a door.

NARROW SIDE (of door)

The side of a door which contacts the stops of a frame.

PANIC BAR

See Crash Bar.

PANIC HARDWARE (Anti-Panic Hardware)

Hardware similar to Fire Exit hardware, but which has been tested and labeled for use only on emergency exit doors which are not fire doors. See Fire Exit Hardware.

GLOSSARY OF TERMS (CONTINUED)

PLASTER GUARD

See Dust Cover Box.

PLINTH (Spat)

A section of sheet metal, usually stainless steel, used as a base for a door frame at the floor. It has the same gauge and profile as the jamb section, and is flush with the jamb on all surfaces.

POCKET DOOR

A door that is prepared to slide into a pocket built in the wall.

PREPARED OPENING ANCHOR

See Anchor, Existing Opening.

RABBET

The recess or offset formed in a door frame to receive the door.

RAIL

The horizontal structural member forming the top or bottom edge of a door or sash, or located at an intermediate height in a door, separating panels or glazed areas.

REMOVABLE MULLION

A mullion separating door openings within a door frame, required for normal operation of doors but designed to permit its temporary removal on occasions.

REMOVABLE STOP

Stop which is removable to allow installation of glass, fixed panel, or door.

RETURN

See Backbend.

REVEAL (of door)

The distance from the face of the door to the face of the frame on the pivot side. (Hingeside)

REVEAL (of frame)

The distance from the face of the frame to the face of the finished wall.

REVERSE BEVEL

A term used to designate the hand of a door when the key is on the exterior and the door swings to the exterior. See Hand of Door.

ROLLER LATCH

A hardware device for holding a swing door in closed position. It consists of a spring-loaded roller mortised into the door edge so as to engage with a grooved strike mortised into the frame jamb.

ROLLER STRIKE

See Strike.

ROUGH BUCK

A sub-frame, usually channel shaped, attached to an existing wall to which the finished frame (cabinet jamb) is attached.

ROUGH OPENING

Size of wall opening into which frame is to be installed.

SANITARY STOP See Terminated Stop.

GLOSSARY OF TERMS (CONTINUED)

SEAMLESS DOOR

A door having no visible seams on its faces or edges.

SECTION WIDTH

See Jamb Depth.

SIDE LIGHT (Lite)

Same as borrowed light except it is attached to a door frame.

SILENCER

See Mute.

SILL (Base)

Bottom horizontal member of borrowed light or side light.

SINGLE ACTING DOOR

A door mounted to swing only on one side of the plane of its frame.

SINGLE RABBET FRAME

A frame having only one rabbit.

SINGLE SWING FRAME

A frame prepared to receive only one swing door.

SMOKE SCREEN (Smoke Barrier)

A frame containing one or a pair of doors, with sidelights on one or both sides and with or without transoms.

SOFFIT

The portion of the frame between stops on a double rabbeted frame and the stop and the largest face on a single rabbeted frame.

SPAT (Plinth)

A protective covering, usually thin stainless steel, used at the bottom of frame jambs to facilitate cleaning.

SPLIT ASTRAGAL

See Astragal, Split.

SPLIT FRAME

A frame in which the jamb width is made up of two pieces.

SPREADER (Spreader Bar)

A stiffening member temporarily attached to the base of a door frame, extending between jambs, to keep the frame in proper alignment during shipping and handling. Not to be used for installation.

SQUARE EDGE DOOR

A door in which the leading edge is in a plane 90 degrees to both faces.

STEEL STUD ANCHOR (Clip)

Metal piece attached to inside throat of frame which secures frame to steel stud.

STICKS (CCW)

Lineal lengths of frame sections used for fabrication of transom/sidelite frames.

STILE The vertical structural member, exclusive of glazing bead or panel mould, which forms the edge of a door.

GLOSSARY OF TERMS (CONTINUED)

STILT

A metal device attached to the jamb of a door frame to hold the frame above the finished floor level.

STOP

That part of a door or window frame against which the door or window closes. See also Glass Stop.

STOP SIDE (of door) (Narrow Side)

That face of a door which contacts the frame stops.

STRIKE

An opening or retaining device provided in the head or jamb of a door or window frame, or in the edge of the meeting stile of an inactive door or window, to receive a lock or latch. (Also referred to as a Keeper or Strike Plate).

Box Strike

A strike consisting of a face plate with rectangular opening, and a box-like enclosure attached to the back of the plate and surrounding the opening.

Dustproof Strike

A strike which is placed in the threshold or sill of an opening, or in the floor, to receive a flush bolt, and is equipped with a spring-loaded follower to cover the recess and keep out dirt.

Electric Strike

A strike used with a latch lock and designed to be actuated by a remotely controlled electromagnet to permit the door to be opened without retracting the latch.

Roller Strike

A strike for latch bolts, having a roller mounted on the lip to reduce friction.

STRIKE BACKSET

See Backset, Strike.

STRIKE EDGE (of door)

See Leading Edge.

STRIKE JAMB

See Jamb.

STRIKE PLATE

See Strike.

STRIKE REINFORCEMENT

A metal plate attached to a door or frame to receive a strike.

STRUT

See Ceiling Stilt.

SUB-BUCK OR SUB-FRAME

See Rough Buck.

SURFACE BOLT

A rod or bolt mounted on the face of the inactive door of a pair to lock it to the frame head and/or sill; operated manually by means of a small knob.

SURFACE HARDWARE PREPARATION

Reinforcement of a door or frame to receive surface-mounted hardware to be applied in the field.

GLOSSARY OF TERMS (CONTINUED)

SWING

The direction of opening of a swing door; synonymous with Hand of Door.

SWING DOOR

A door mounted on hinges or pivots.

TEMPERATURE RISE DOOR

Door that has a rating determined by the amount of heat passing through the door for the first 30 minutes of a fire test.

TEMPLATE

A precise detailed layout or pattern for providing the necessary preparation of a door or frame to receive hardware.

TEMPLATE HARDWARE

Hardware manufactured within template tolerances.

TERMINATED STOP (Cut-Off Stop) (Hospital Stop)

A stop which terminates above floor line and is closed with a 45 or 90 degree angle.

THRESHOLD

A raised member extending between the jambs of a frame at the floor.

THROAT FILLER

Flat section generally with offset edges, used to close frame section throat. Usually fastened in by tackwelding to backbends.

THROAT OPENING

Opening between backbends of frame.

TOP RAIL

Horizontal rail at the top of door connecting lock stile with the hinge stile.

TRANSOM

A frame area immediately above a door opening and containing fixed glass, an operating sash, panel or other filler.

TRANSOM BAR

That part of a transom frame which separates the door area portion from the transom area portion.

TRANSOM FRAME

Door frame having transom bar and glass, panel or louver above door opening.

TRIM

See Face.

TRIM PROFILE

The non hardware portion of an adjustable or split frame.

TRIMMED OPENING

See Cased Opening.

UNDERCUT

Clearance between door bottom and finished floor.

VISION LITE

Small vision window in upper portion of a door, usually square but often rectangular in a vertical position.

GLOSSARY OF TERMS (CONTINUED)

WEATHERSEAL CHANNEL

A top closing channel on a door, set in mastic with flanges downward.

WEATHERSTRIP

Material applied to the edges of a door or to the inner edges of its frame to close the clearance opening and minimize or prevent the passage of air, moisture and dirt.

WEEPHOLE

A small opening provided to permit the drainage of moisture.

WIDE SIDE (of door)

See Hinge Side.

WOOD STUD ANCHOR (Clip)

Metal piece attached to inside throat of frame which secures frame to wood stud.

WRAP-AROUND FRAME

A frame which fits over the wall.

REFERENCES:

Hollow Metal Technical and Design Manual —The National Association of Architectural Metal Manufacturers.
Nomenclature for Steel Doors and Steel Door Frames — ANSI-A123.1

U.L. SECOND LOCATION MANUFACTURING PROGRAM

Intertek (Warnock Hersey) and Underwriters Laboratories have programs by which a Curries door and frame distributor can modify doors and build frames to meet fire labeling criteria and apply a listing mark in their shop. The program is called “Second Location Labeling Capabilities”.

Under this program you can stock doors that bear a special fire door part for further processing label instead of stocking some A label, B label and C label doors. Doors which bear this special label may be used as received or they may be modified by installing a window kit, a louver, drilling and tapping for hardware mounting and other modifications as described in the label agency procedure manual. These doors can then have a listing mark applied at your shop to meet your customers’ requirements.

Standard non-label frames and frame parts may be stocked as opposed to labeled frames. Standard frames may simply have a label applied or frame components and sticks may be fabricated into a finished frame and labeled.

For further information on this program please contact your Field Sales Manager or your Customer Service Professional.

WELDING PROCEDURES

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FRAME WELDING PROCEDURE

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FRAME WELDING PREPARATION

It is highly recommended that all frame pieces be prepared and checked thoroughly before attempting to assemble and weld them together. This precaution, in many cases, can save time and scrap loss. Once the frame structure is welded, problems are nearly impossible to correct. The following preparation pointers will help eliminate frame welding problems.

- Always check all frame parts with drawings and measure all dimensions including hardware locations and size.
- Accurately measure all profile dimensions on the mating parts such as jamb depth, rabbet, stop dimensions and face dimensions to be certain of a matching fit of the jamb and head profile, jamb/head and transom or mullion profile or sill and jamb/mullion profile.
- Make certain all saw miter cuts are square across the profile. Only a slight angularity can cause big problems in flatness, squareness and overall dimensional control of the finished frame.
- De-burr all saw cut edges using a file but take special care to avoid filing at more than a slight angle to the plane of the metal so as not to cut away material at the surfaces to be joined. If these edges are too thin, this can lead to burning through when welding.
- When face welding mullion it is helpful to peen the mating edge slightly inward using a peening hammer. This provides a slight recess between the mullion face and the jamb face for welding so that the weld will not be all ground off in the finishing process. Take care not to deform the face too far back from the edge so that the finished appearance will be flat and smooth after grinding the weld.
- It is very helpful when assembling, clamping and welding to place spacer bars in the opening between rabbets. These bars, cut to the exact opening size, will help considerably in maintaining dimensional control.
- It is very important when welding frames for a door opening to start with the hinge jamb and the head first. Clamp and square the hinge miter and make certain the distance from the head rabbet to the top hinge cut-out is correct and accurate before welding. This is necessary to assure the door will fit the opening properly and the correct clearance will be maintained.
- Check and recheck squareness and flatness of the frame after clamping and after each welding operation. This will make any required straightening much easier. One good method of monitoring overall squareness, effective especially on multiple opening frames, is to measure diagonally across each opening plus across the overall frame. For example, a frame with door opening, transom and multiple sidelites should be measured or "cross taped" over the door opening, the transom opening and over both openings as well as the side lite opening and finally the overall frame. Straightening methods can vary. One way is to clamp the longer diagonal and force it a distance of one half the difference between the two diagonals of a given opening.

FRAME WELDING PROCEDURE

FIGURE 1

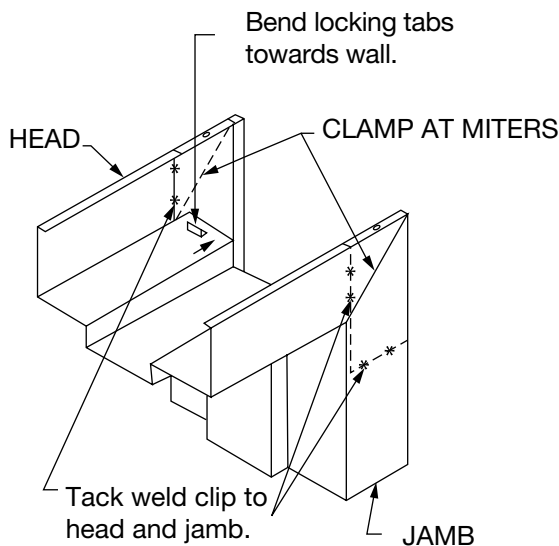


FIGURE 1 & 2

KD FRAME WELDING — Tab Welded KD Frames with Corner Clips (exposed seam)

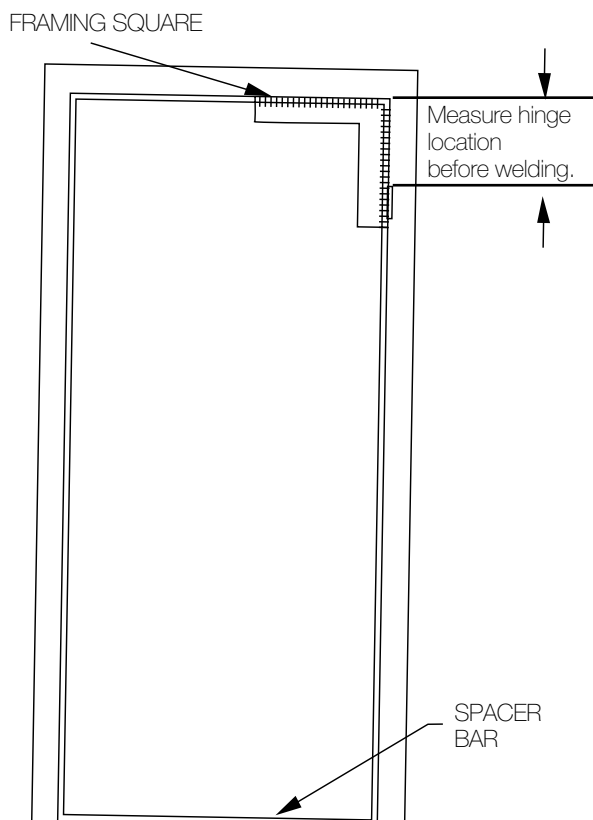
1. Assemble frame by inserting both jambs into head section with the jamb tabs protruding through the slots in the head resulting in a closed seam face. Lay frame flat on work supports with door side up. Bend the tabs over toward the wall and at a 90 degree angle to the jamb. See Figure 1.
2. Starting with the door side of the frame up, square the hinge jamb with the head and clamp.

NOTE: Make certain the distance from the head rabbet to the top hinge cut-out is correct and accurate and that the corner is square after clamping.

Then square the lock jamb and clamp.

3. Place a spacer bar, cut to the exact door opening size, between the rabbets at the miters to check opening size. To help maintain size during welding, place the spacer bar at foot of frame. See Figure 2. Check squareness and flatness of both jambs with respect to the head. Check stop alignment and adjust if necessary.
4. Weld tabs to head. Tack weld corner clips to head and jambs on both sides of frame.
5. Remove clamps, make final check for squareness and flatness and tack weld a temporary spreader bar to foot clips for shipping purposes.
6. Grind and finish, sand smooth and tack weld spots on frame face. Prime paint.

FIGURE 2



FRAME WELDING PROCEDURE

FIGURE 1

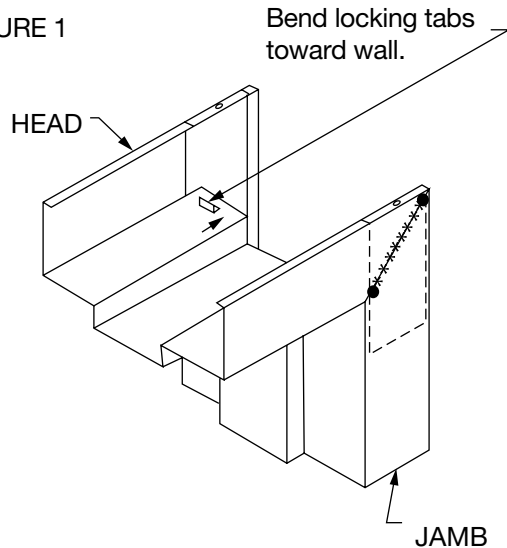


FIGURE 2 — To Move Jamb Outward

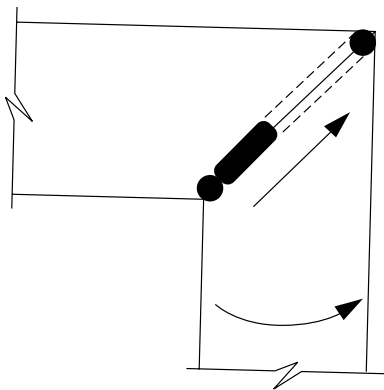


FIGURE 3 — To Move Jamb Inward

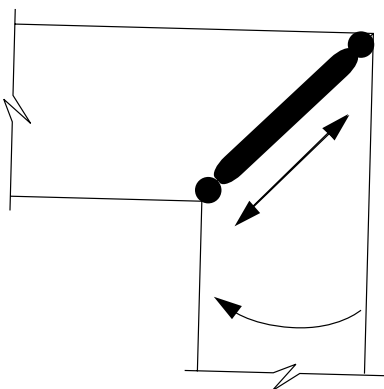


FIGURE 1 — 3

MITER WELDED KD FRAMES

1. Follow steps 1, 2 & 3 of KD Tab Welded Frame Procedure.
2. When frame is properly flat and square, tack weld both ends of the miters on the face side. Remove the miter clamps. See Figure 1.

NOTE: If jambs are furnished without corner clips, or breakaway corner clips have been removed, miters can be welded on the inside of the face thereby minimizing weld grinding before finishing according to Step 6.

3. If frame is out of square see Step 4.
If frame is still square and flat, weld a bead along the miter seam between tacks. Do not weld over tacks.
4. To correct minor out of squareness:
 - A. To Move Jamb Outward (see Figure 2)
Start bead next to but not on inside tack and weld toward and over outside tack.
 - B. To Move Jamb Inward (see Figure 3)
Reverse the process.

Normal cooling of the weld should move the jambs in the direction desired. If more than a slight movement is desired, squirt water from a plastic squirt bottle on the weld immediately after welding to speed up the cooling rate. This will cause more shrinkage and movement.
5. Flip frame over and repeat process.
6. Finally weld the locking tabs to the head as shown in Figure 1.
7. Grind all welds smooth, fill voids with body filler, grind and sand smooth and prime paint exposed areas. Tack weld temporary spreader bar to foot clips.

FRAME WELDING PROCEDURE

FIGURE 1

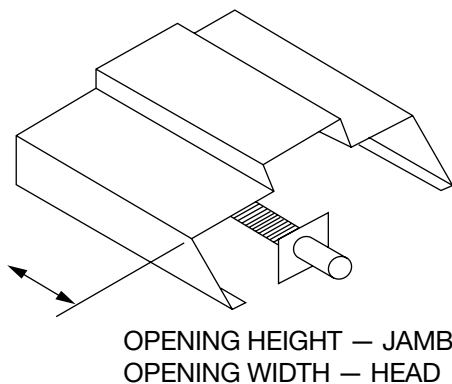


FIGURE 2

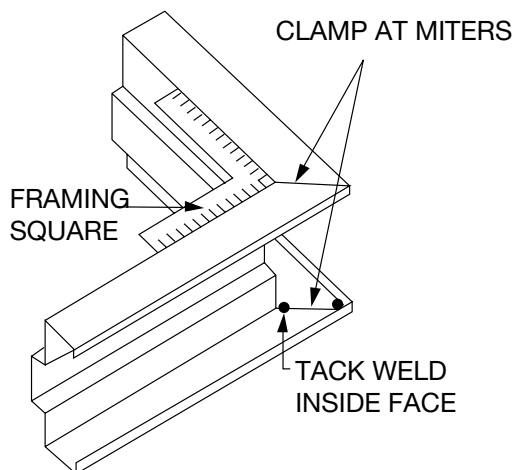


FIGURE 3

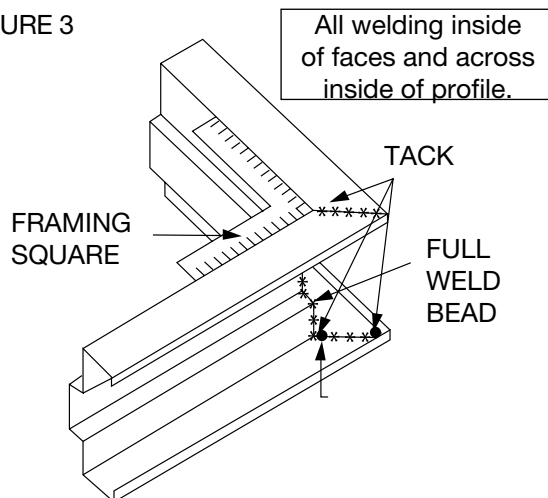


FIGURE 1 — 3

FULL WELDED SAW MITERED THREE SIDED FRAME

1. Measure all parts and file burrs off the saw cut edges. Assemble frame door side up. Close all miters and clamp.
2. Square frame and place spacer bar between rabbets at miters. Measure top hinge location from head rabbet. Tack weld both ends of each miter on inside of face and remove clamps. Move spacer bar to the foot of the frame. See Figure 2.
3. Recheck squareness on door side of frame. Re-measure top hinge location. If frame is square, weld a bead between the tacks on each miter. Do not weld over tacks.
4. If frame is slightly out of square straighten according to Step 4 of KD Miter Welded Frame Procedure.

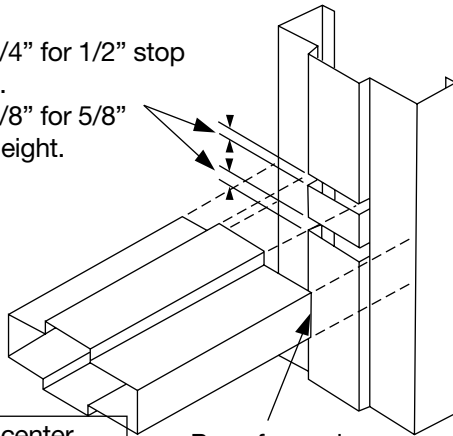
NOTE: At the miter stop and rabbet, gapping may occur. Bridge weld between the two, and while hot, tap together with a hammer.

5. Next, on the hinge jamb weld a continuous bead from the back inside corner of one miter across the rabbet stop and opposite rabbet, to the inside corner of the opposite miter. Repeat the process for the lock jamb. See Figure 3.
6. Make final check for squareness and flatness, grind welds smooth on exposed faces, fill voids with filler, grind and finish smooth and prime paint. Tack weld a spreader bar to the foot clips for shipping purposes.

FRAME WELDING PROCEDURE

FIGURE 1

Min. 3/4" for 1/2" stop height.
Min. 7/8" for 5/8" stop height.



Entire center portion (stop to stop) can be removed if desired.

Peen face edges slightly inward.
DO NOT DEFORM

FIGURE 2

Measure hinge location before welding.

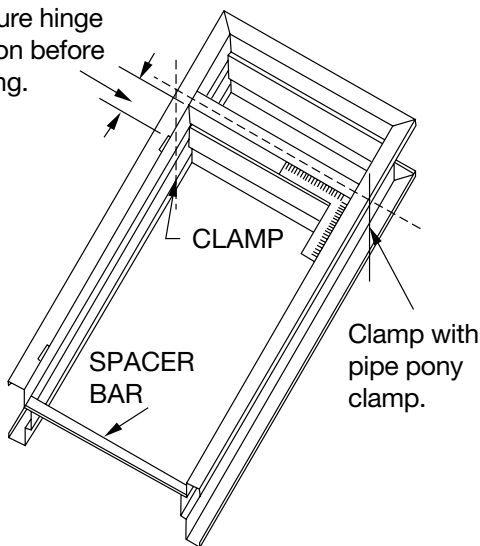


FIGURE 3

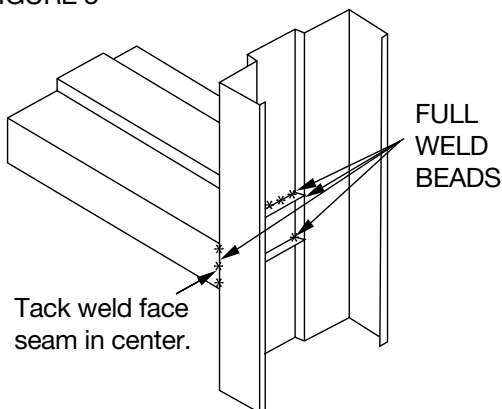


FIGURE 1 – 3

MULLION JOINT, SAW NOTCHED JAMB WELD ASSEMBLY

1. Saw notch the stop of the jamb, head or sill to receive the stop of the mullion so the faces and rabbets butt squarely. De-burr slots with file. Slot cut-outs can be bent inward using hammer and drift punch so rabbet of mullion fits flush with rabbet of jamb. See Figure 1.

2. Set frame on work table door side up and clamp with pipe pony clamps. See Figure 2.

Measure distance from transom rabbet to top hinge location. Align stops. Place a spacer bar between rabbets at foot of frame.

NOTE: Miters should be welded before mullion joint.

3. When frame is square tack weld on the center of each face seam. See Figure 3. Double check squareness and full weld each face seam. Do not weld over tacks.

4. Turn frame over and replace pipe pony clamps. Check squareness and full weld opposite face seams.

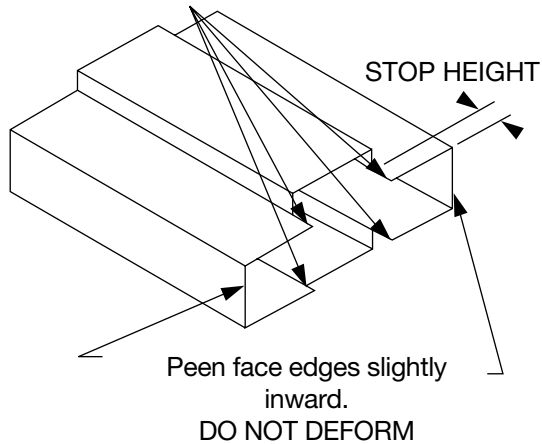
5. Use a wooden wedge to force the mullion stops against upper and lower slots in jamb and full weld around the stops on the inside of the jamb.

6. Grind exposed face welds smooth, fill voids with filler, grind and sand smooth and prime paint.

FRAME WELDING PROCEDURE

FIGURE 1

Round corners with file to fit radius at stop on vertical mullion.



**FIGURE 1 & 2
MULLION TO TRANSOM BAR JOINT**

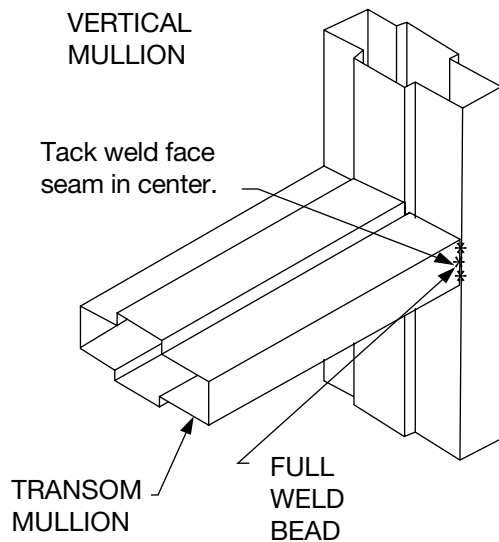
1. Notch ends of transom mullion stops to fit vertical mullion. See Figure 1.

Measure distance from transom rabbet to hinge location and clamp with pipe pony clamps. Align stops.

NOTE: An alternate method is to saw notch the stop of vertical mullion the same as a vertical jamb.

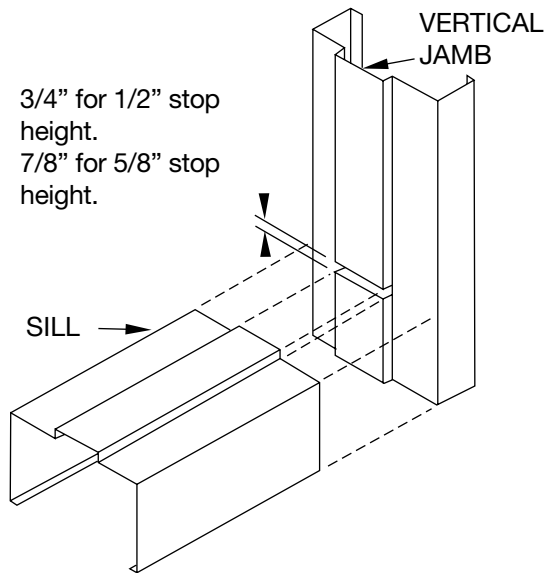
2. When frame is square tack weld on the center of each face seam. See Figure 2. Remove clamps. Double check squareness, then full weld face seams on both ends of the transom mullion.
3. Turn frame over. Replace clamps, check squareness and repeat Step 2 on remaining face seams.
4. Grind exposed face welds smooth, fill voids with filler, grind and finish smooth and prime paint.

FIGURE 2



FRAME WELDING PROCEDURE

FIGURE 1



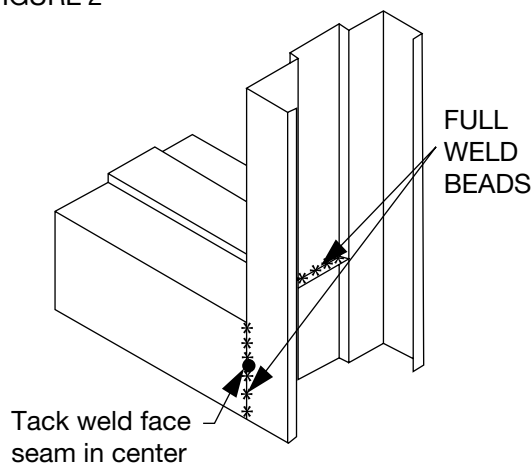
**FIGURE 1 & 2
SILL JOINT, SIDE LITE FRAME WELD ASSEMBLY**

1. Saw notch the stop of the vertical jamb or mullion to receive the stop of the horizontal sill. See Figure 1.

NOTE: An alternative method is to notch the stops of the sill to fit over the stops of the vertical jamb or mullion.

2. Clamp parts together using pipe pony clamps.
3. Square frame, level the sill face to the jamb face, then tack weld the center of each face seam on both sides of the sill piece. Remove the clamps, check for squareness. Full weld each face seam, rechecking squareness after each. Do not weld over tacks as this might cause the seam to open before weld is cool. See Figure 2.
4. Weld around the stop of the sill which is protruding through the slot in the vertical jamb.
5. Grind exposed face welds smooth, fill voids with filler, grind and finish smooth and prime paint.

FIGURE 2



FRAME WELDING PROCEDURE

LARGE SIDE LITE FRAMES, BORROWED LITE FRAMES AND MULTIPLE OPENING FRAMES

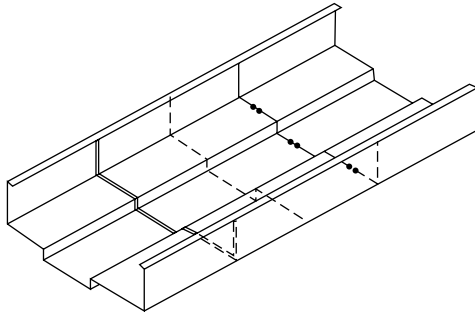
1. File all saw cut miters and notches smooth. Check each piece for overall length and width dimensions. Verify all hardware preparations with the frame specification sheets.
2. To prevent any misalignment during the frame welding procedure, two piece jambs (such as mullions, sills, and rails with filler plates) should be squared and tack welded together first.
3. Start with the head section, clamp and attach with tack welds, all vertical jambs and mullions on door side of frame.
4. Next, clamp and attach with tack welds, all horizontal transoms and sills; square all parts individually, yet simultaneously with the whole frame. Full weld the face seams of all parts.

NOTE: Use spacer bar in all door openings during welding procedure.

5. Turn the frame over and repeat Steps 3 and 4 on any seams which cannot be reached.
6. Grind exposed face welds smooth, fill voids with filler, grind and finish smooth and prime paint.

FRAME WELDING PROCEDURE

FIGURE 1



**FIGURE 1 – 3
SPLICE CONNECTION – HEAD OR JAMB**

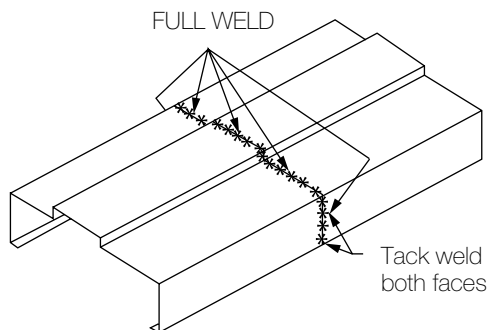
1. File burrs from mating edges of frame parts and fit together with joint reinforcement sleeve (Part #PO115), centered over joint. Close tightly and clamp over seam using miter clamps on both rabbets. See Figure 1.

Check straightness and alignment of faces and stops

2. Tack weld one end of joint reinforcement to inside of rabbet and soffit and recheck straightness and alignment. See Figure 2.

Tack weld other end of reinforcement. Again check straightness and alignment.

FIGURE 2



3. Tack weld both ends of face seams alternately, remove clamps and full weld the face seams, rabbets to within 1/2" of the stops and across soffit. Generally, weld parts of the profile seam which can be ground smooth without gouging.

NOTE: Avoid welding over tack welds.

4. Grind weld smooth, fill surface voids with filler, grind and finish smooth and prime paint.

FRAME WELDING PROCEDURE

FIGURE 1

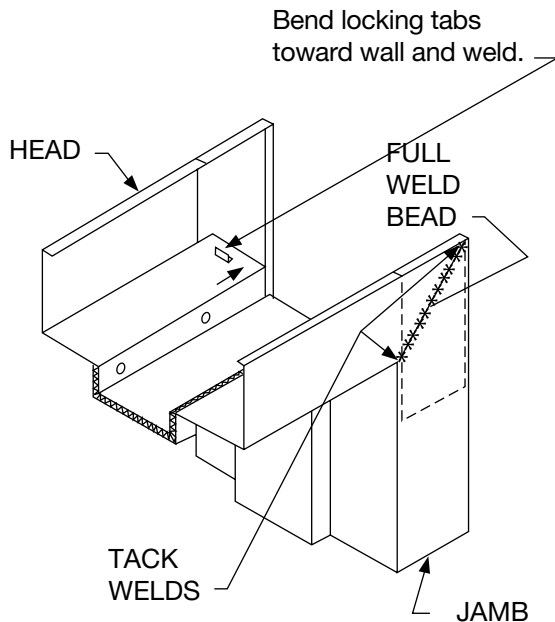


FIGURE 2

FRAMING SQUARE

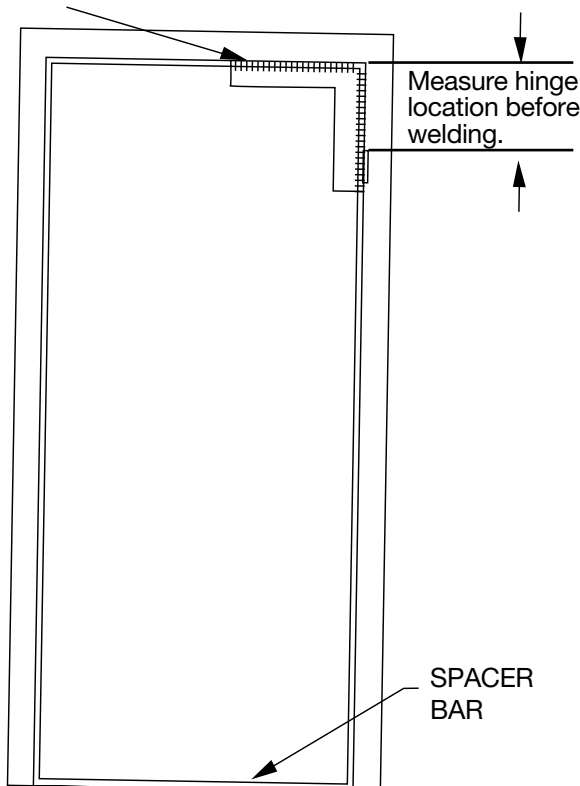


FIGURE 1 & 2

THERMAL BREAK FRAME — KD MITER WELDED

1. Assemble frame by inserting both jambs into head section with the jamb tabs protruding through the slots in the head and the miter seam tightly closed. Lay frame flat on work supports with door side up. Bend the tabs over toward the wall and at a 90 degree angle to the jamb. See Figure 1.

2. Starting with the hinge jamb, square the head and jamb and clamp.

NOTE: Make certain the distance from the head rabbet to the top hinge cut-out is accurate and the corner is square after clamping.

Then square the lock jamb and clamp.

3. Place a spacer bar, cut to the exact door opening size, between the rabbets at the miters to check opening size. Place spacer bar at foot of frame to help maintain size during welding. See Figure 2. Check squareness and flatness of both jambs with respect to the head. Check stop alignment and adjust if necessary.

4. When frame is flat and square, tack weld both ends of four miters on the face side. Remove the miter clamps.

5. Recheck squareness. If minor squareness adjustments are needed, proceed according to Step 4 of Miter Welded KD Frame Welding Procedure on page 3. If no further squaring is required weld a bead along each miter seam between tacks. DO NOT WELD OVER THE TACKS.

6. Finally weld the locking tabs to the head. Grind face welds, fill, finish and prime paint.

FRAME WELDING PROCEDURE

FIGURE 1

Round corners with file to fit radius at stop on vertical mullion.

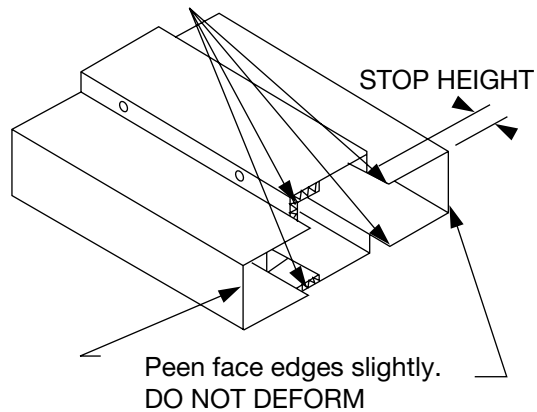
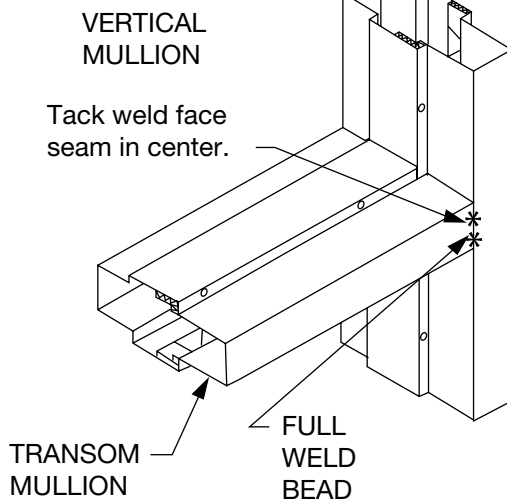


FIGURE 1 & 2
THERMAL BREAK FRAME MULLION JOINT

1. Thermal break frame sections should not be welded in the soffit or stop area to avoid destroying the polyethylene foam insulating material. Therefore, all mullion to mullion or mullion to frame joints should be made by notching the ends of the mullion to fit the contour of the stop on the vertical mullion, jamb or head. Peen face edges as shown. See Figure 1.
2. Fit mullion to its mating part and clamp with pipe pony clamps. Measure top hinge location and adjust if necessary.
3. When unit is square, tack weld in center of face on both sides. Remove clamps. Recheck squareness and full weld face seams only. See Figure 2.
4. Grind all welds smooth, fill, finish smooth and prime paint exposed areas.

NOTE: It is recommended that the thermal break mullion be factory notched. Notching dies will deform the profile.

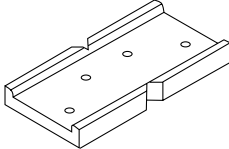
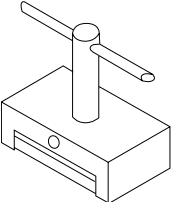
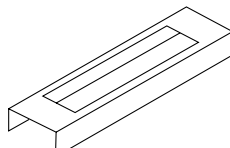
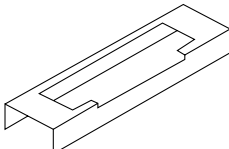
FIGURE 2



TEMPLATES AND JIGS

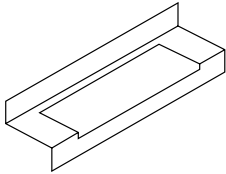
Door Hardware Cut-out Templates	34
Frame Hardware Cut-out Templates	35

DOOR HARDWARE CUT-OUT TEMPLATES

	PART NO
 HINGE DRILL FIXTURE 4-1/2" Hinge Drill Fixture — Replacement Door, TD 928 — 1/4" Backset 4-1/2" Hinge Drill Fixture — Replacement Door, TD 943 — 3/16" Backset 5" Hinge Drill Fixture — Replacement Door, TD 956 — 1/4" Backset	CD008932 CD009192 CD009272
 LATCH BOLT 1-3/4 G2 - Latch Bolt Tab Weld Fixture	CD009012
 LOCK FRONT G1 - Gov't 160, Lock Front 1-3/8 Doors (2-1/4") G2 - Gov't 161, Lock Front 1-3/8 Doors (2-1/4") G2 - Gov't 161, Lock Front 1-3/4 Doors (2-1/4") G3 - Mortise, Lock Front 1-3/4 Doors (8") G1 - G2 Cylindrical Lock Face 1-3/8 (2-1/8" diameter) G1 - G2 Cylindrical Lock Face 1-3/4 (2-1/8" diameter) H1 - Flush Bolt Lock Front 1-3/8 Doors (6-3/4") H1 - Flush Bolt Lock Front 1-3/4 Doors (6-3/4")	CD007112 CD007292 CD007372 CD007452 CD008442 CD008512 CD007522 CD007602
DEAD LOCK STRIKE E1 - Dead Lock Strike (No Lip), 1-3/8 Doors (3-1/2") E3 - Dead Lock Strike (No Lip), 1-3/4 Doors (3-1/2") E4 - Dead Lock Strike (No Lip), 1-3/8 Doors (2-3/4") E4 - Dead Lock Strike (No Lip), 1-3/4 Doors (2-3/4")	CD007782 CD007862 CD007942 CD008022
 MORTISE STRIKE E1 - Mortise Strike, 1-3/4 Doors (4-7/8") CYLINDER LOCK STRIKE E2 - Cylinder Lock Strike, 1-3/8 Doors (2-3/4") E2 - Cylinder Lock Strike, 1-3/4 Doors (2-3/4")	CD008102 CD008282 CD008362

FRAME HARDWARE CUT-OUT TEMPLATES

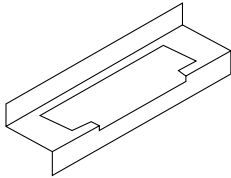
PART NO



HINGE

352 Hinge (3-1/2") 1 3/8" door frame
453 Hinge (4-1/2") 1 3/4" door frame
503 Hinge (5") 1 3/4" door frame

CF002817
CF002997
CF003077



MORTISE STRIKE

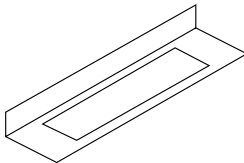
E1 — Mortise Strike, 1-3/4 Doors (4-7/8")

CF001907

CYLINDER LOCK STRIKE

E2 — Cylinder Lock Strike, 1-3/8 Doors (2-3/4")
E2 — Cylinder Lock Strike, 1-3/4 Doors (2-3/4")

CF002087
CF003987



STRIKE

E3 — Dead Lock Strike (No Lip), 1-3/8 Doors (3-1/2")
E3 — Dead Lock Strike (No Lip), 1-3/4 Doors (3-1/2")
E4 — Dead Lock Strike (No Lip), 1-3/8 Doors (2-3/4")
E4 — Dead Lock Strike (No Lip), 1-3/4 Doors (2-3/4")
H2 — Flush Bolt Strike, 1-3/8 Doors (2-1/4")
H2 — Flush Bolt Strike, 1-3/4 Doors (2-1/4")
H5 — Reversible Flush Bolt, 1-3/4 Doors (3-7/8")

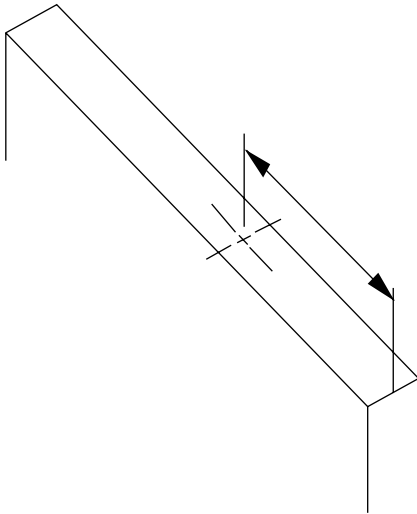
CF002247
CF002327
CF002407
CF002577
CF002657
CF002737
CF004717

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USE OF LOCK FRONT AND STRIKE TEMPLATES

FIGURE 1



**FIGURE 1 – 3
USE OF THE LOCK FRONT AND STRIKE TEMPLATES**

1. Locate center of lockfront or strike and scribe center lines. Allow for door undercut when measuring height from bottom edge of door so the center will coincide with the mating strike on the frame. See Figure 1.
2. Select proper template and align centerline marks with corresponding marks on door edge and scribe inside the opening. See Figure 2.
3. Refer to DOOR HARDWARE, Hardware Edge Cut-Out Preparation to complete cut-out procedure.

FIGURE 2

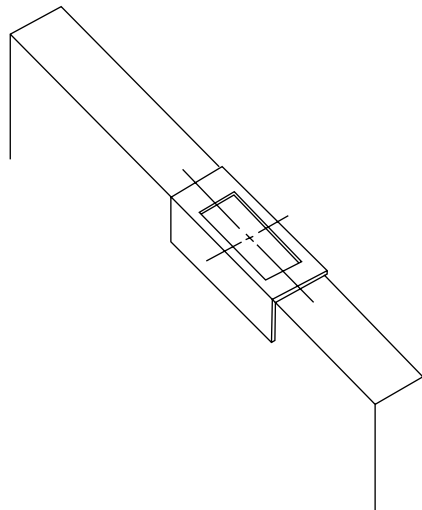
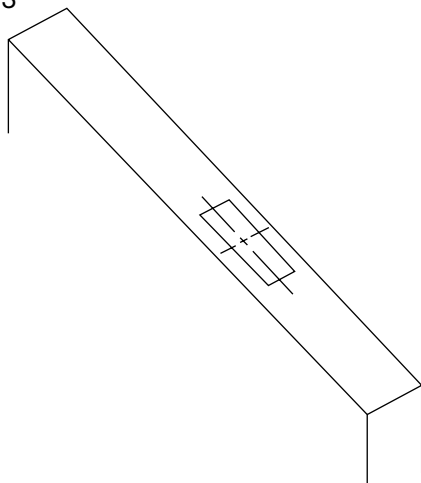


FIGURE 3



GENERAL PROCEDURE FOR DOOR EDGE CUT-OUT PREPARATION

FIGURE 1

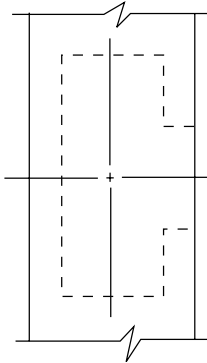


FIGURE 2

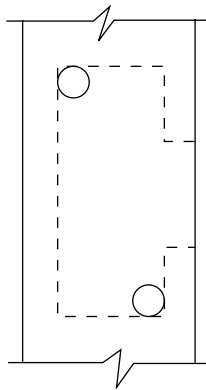


FIGURE 3

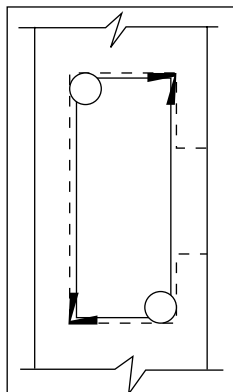
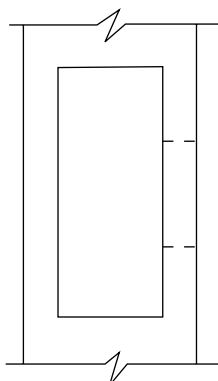


FIGURE 4



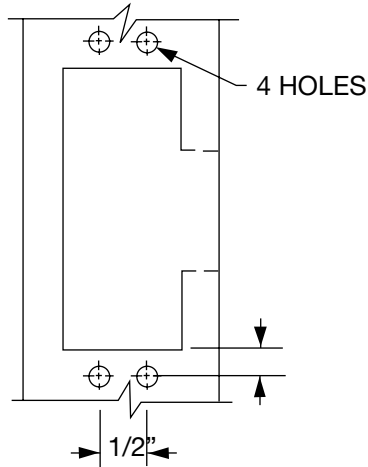
**FIGURE 1 — 4
GENERAL PROCEDURE FOR DOOR EDGE
CUT-OUT PREPARATION**

1. Select proper hardware template, locate and scribe center lines of lock or strike front making sure they coincide with the mating strike or lock front. Align the centerline mark on the template and scribe the opening profile. See Figure 1.
2. Center punch and drill two holes, large enough to accept blade of sabre saw, in diagonal corners of cut-out and within scribed lines. See Figure 2.
3. Cut inside of scribe line from holes to adjacent corners and remove loose cut-out part. See Figure 3.
4. Square all four corners and dress all edge surfaces of cut-out to final size requirements using file. De-burr all edges on the inside so assembled tabs will fit flush. See Figure 4.

NOTE: Check the fit of the actual physical hardware in the cut-out and file as needed.

GENERAL PROCEDURE FOR DOOR EDGE CUT-OUT PREPARATION

FIGURE 5



**FIGURE 5 – 7
EDGE CUT-OUT PREPARATION (continued)**

5. Locate and center punch and drill two holes each above and below the cut-out to be used to plug weld mounting tabs to the inside of the door edge. The size of these holes depends on the type of welder used. A stick type arc welder could require 3/8" diameter holes or a wire welder could be used with 1/4" diameter holes. De-burr these holes inside so the mounting tabs will fit flush. See Figure 5.
6. Assemble mounting tabs to sample face plate and locate in position. Clamp and plug weld through the four holes. See Figure 6 & 7.

FIGURE 6

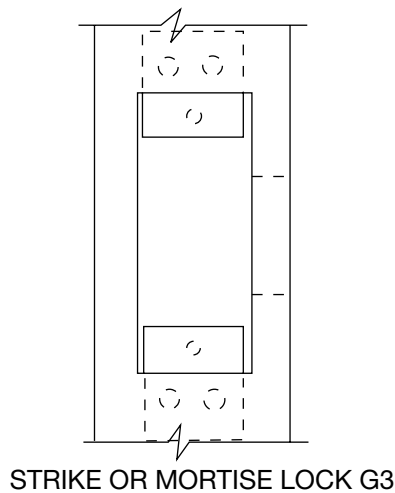
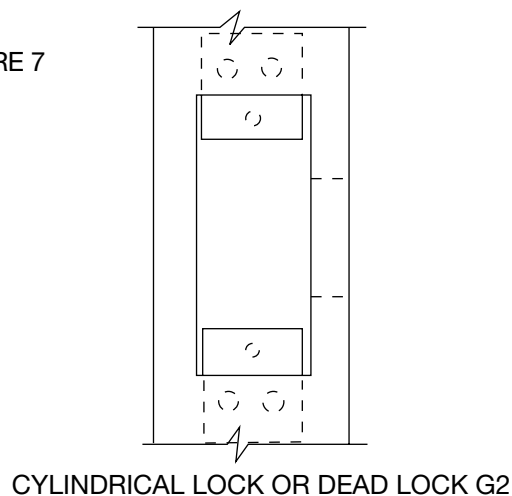


FIGURE 7



ALTERNATE QUICK METHOD OF EDGE PREP-DOOR WITHOUT WELDED SEAMS

FIGURE 1

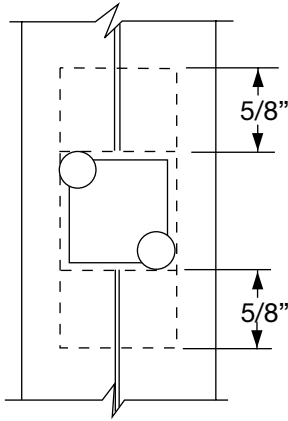


FIGURE 2

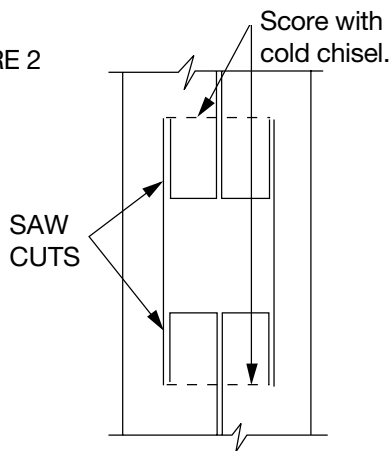


FIGURE 3

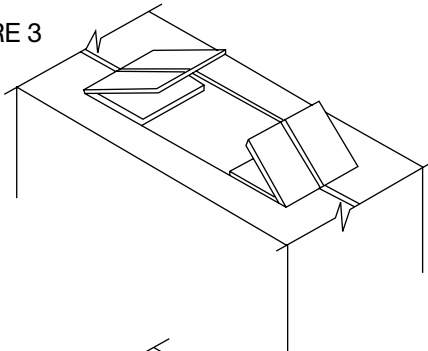


FIGURE 4

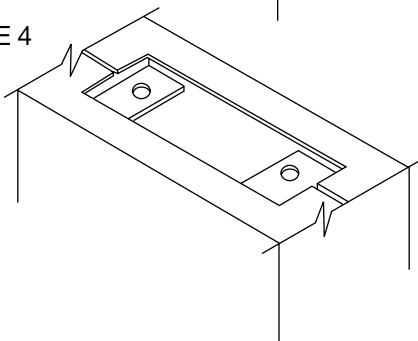


FIGURE 1 – 4

ALTERNATE QUICK METHOD OF EDGE PREP FOR DOORS WITHOUT WELDED SEAMS

1. Select proper hardware template and layout and scribe cut-out on edge of door. Then scribe two lines across opening 5/8" from each end. See Figure 1.
2. Drill two diagonally opposite holes in the corners of the center area large enough to accept a sabre saw blade then saw from the two holes to the adjacent corners and lift out loose piece. See Figure 2.
3. Next cut along edges parallel to door face to the full length of the cut-out. Then score the end lines of the cut-out with a cold chisel and hammer. See Figure 2.
4. Insert cold chisel under skin of tabs at center opening and bend up with hammer until pieces break off exposing surface of lock channel which will be used for lock face or strike plate mounting tabs. See Figure 3.
5. If there is not enough recess from the door edge surface to the mounting tabs for the lock front to fit flush, score the tab in the same location as before (adjacent to the end of the cut-out) using a cold chisel and hammer. Bend tab down approximately 10° to 20° and back up level. Do this in small increments until adequate offset is achieved. See Figure 4.
6. Dress cut-out opening to size, lay in lock face or strike plate and line drill through mounting holes with proper tap drill and install mounting screws.

G1, G2 GOV'T 160, 161 CYL. LOCK DOOR FACE PREPARATION

FIGURE 1

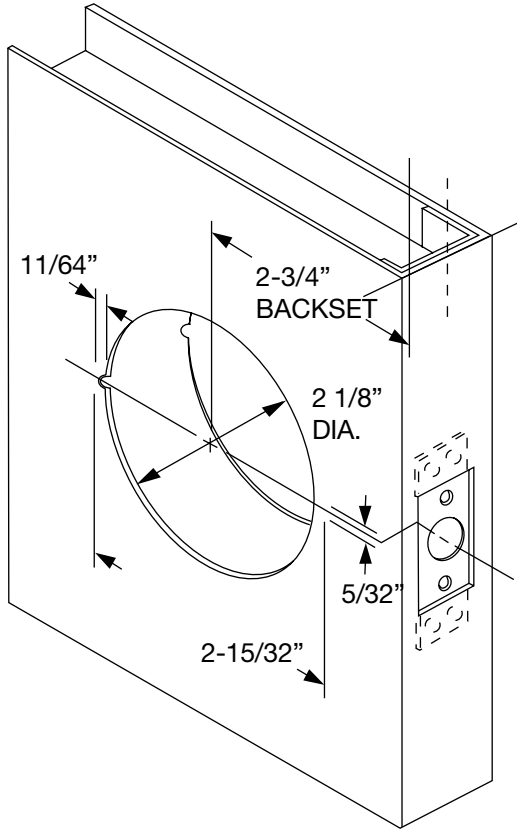


FIGURE 1

G1, G2, GOV'T. 160, 161 CYLINDRICAL LOCK DOOR FACE PREP

1. Measure and scribe the horizontal centerline of the lock on both faces of the door. If a template is used, align the backset center hole with the horizontal centerline and center punch the location of the 2 1/8" diameter cut-out. If template is not used, locate backset center punch on each face along the centerline of the high side of bevel $2\frac{3}{4}" + \frac{1}{6}"$ and on the low side of bevel $2\frac{3}{4}" - \frac{1}{16}"$. *This will locate the lock exactly 2 3/4" from the nominal door edge at the mid point of the bevel as required.
* Beveled lock edge doors only; non standard square lock edge doors 2-3/4" backset both sides.

2. Using a 2 1/8" diameter hole saw, in a drill press preferably, cut holes in both door faces. If measurements are accurate these holes should be in line with each other.
3. Cut two notches each in this opening, in each face, as indicated by the scribed lines using a sabre saw.

NOTE: Lever handle locks may require additional mounting holes to be drilled. Check template.

4. Dress all saw cut edges with a file and paint any exposed metal surfaces.

CYLINDRICAL LOCK CONVERSION (G2) FROM MORTISE LOCK FRONT (G3)

FIGURE 1

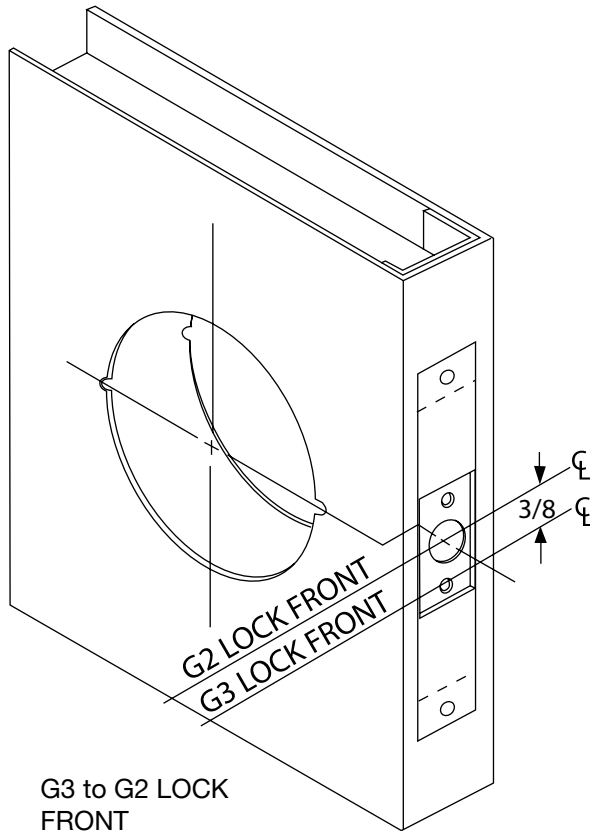


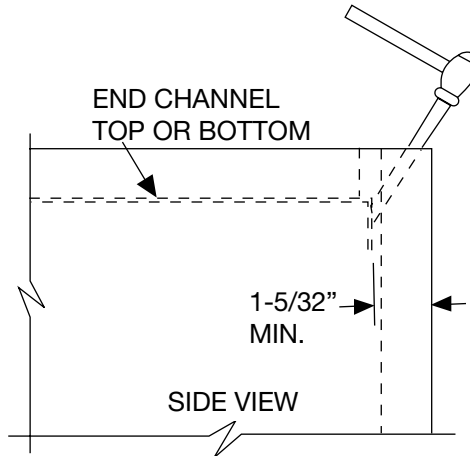
FIGURE 1

CYLINDRICAL LOCK CONVERSION (G2) FROM MORTISE LOCK FRONT (G3) LOCK FRONT EDGE PREPARATION

1. Install G3 to G2 lock front insert using two #12-24 screws. Locate insert with G2 provision toward upper portion of G3 edge preparation. See Figure 1.
2. Locate and scribe lock cylinder cut-out on both door faces with centerline of cut-out 3/8" above centerline of original G3 mortise edge cut-out according to instructions for cylindrical lock door face preparation.

H1 FLUSH BOLT PREPARATION

FIGURE 1



**FIGURE 1 – 3
H1 FLUSH BOLT PREPARATION**

1. Bend “Tongue” of end channel inward 90° using hammer and drift punch to provide clearance for flush bolt. See Figure 1.
2. Locate flush bolt guide tab on end channel, tack weld as shown (Ref. ANSI 115.4). See Figure 2.
3. For doors with flush caps, cut rectangular opening in cap as shown. Center and scribe opening with top flush cap assembled.

Remove and cut inside scribed lines with sabre saw. Square and de-burr edges with file. Reassemble and check for fit with flush bolt guide plate. Adjust opening if necessary. See Figure 3.

FIGURE 2

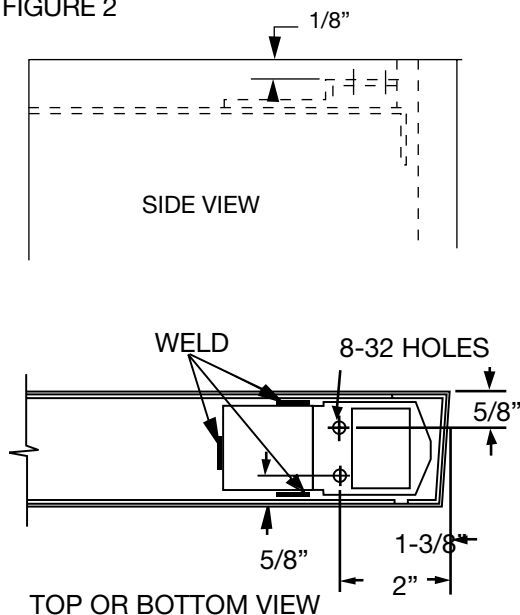
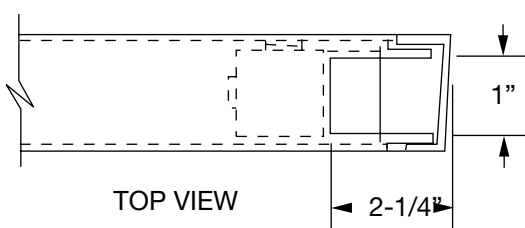


FIGURE 3



H1 FLUSH BOLT PREPARATION

FIGURE 1

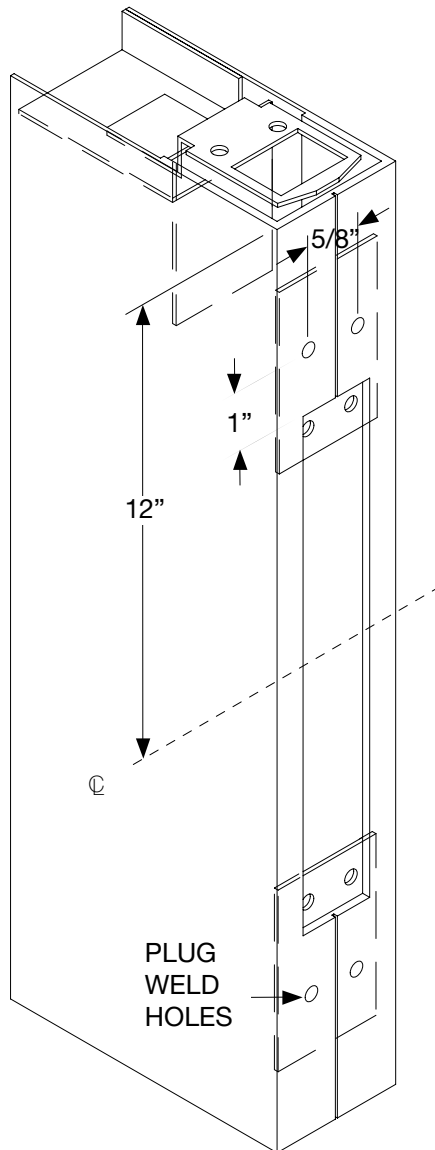


FIGURE 1
H1 FLUSH BOLT PREPARATION (continued)

4. Locate and scribe door edge cut-out using H1 edge template.
5. Cut and finish edge cut-out opening according to edge cut-out preparation instructions.
6. Locate, center punch and drill two holes each (above and below the cut-out) to be used to plug weld the plate mounting tabs to the inside of the door edge. De-burr holes on the inside so tabs will fit flush.

NOTE: Drill plug weld holes only as large as necessary for welder use.

7. Loosely assemble two drilled mounting tabs to a sample lock front with four mounting screws. Locate in position with the two free ends of the tabs inside and under the plug weld holes. Align tabs, tighten screws and clamp so the plate is flush with the door edge surface. Plug weld through the four holes.
8. Remove lock face grind welds smooth. Fill, grind and finish smooth and prime paint exposed metal surfaces.

FLUSH TOP CAPS

FIGURE 1

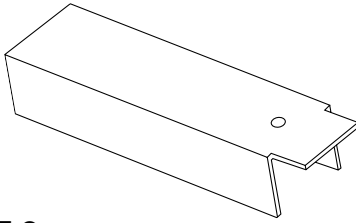


FIGURE 2

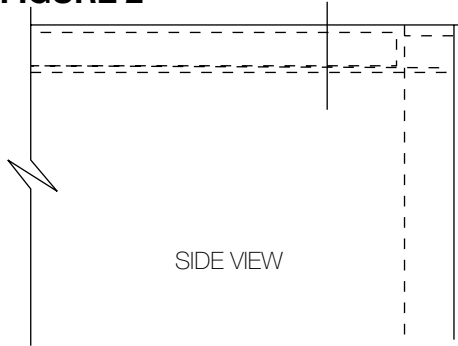
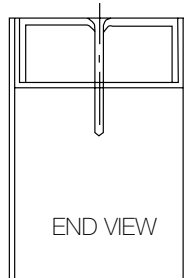


FIGURE 3



FIGURE 4



**FIGURE 1 – 7
FLUSH TOP CAPS**

STEEL TOP CAPS

1. Select top cap sized for the door width being used and fit into place. See Figure 1.
2. Drill attachment screw holes through top end channel with self drilling No. 6-32 screws using countersunk holes in top cap as a guide. Tighten screws securely. See Figures 2, 3 & 4.

CUT-OFF TOP OR BOTTOM

FIGURE 1

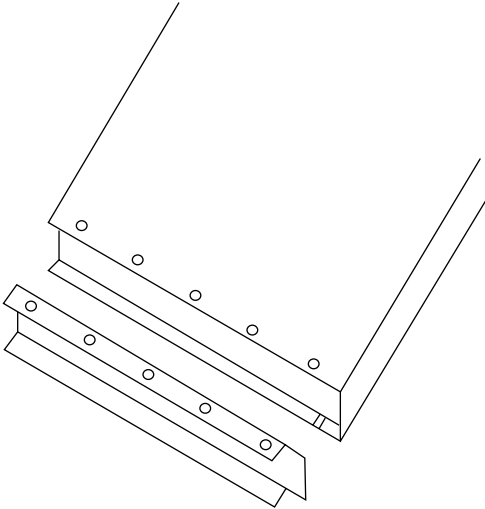


FIGURE 2

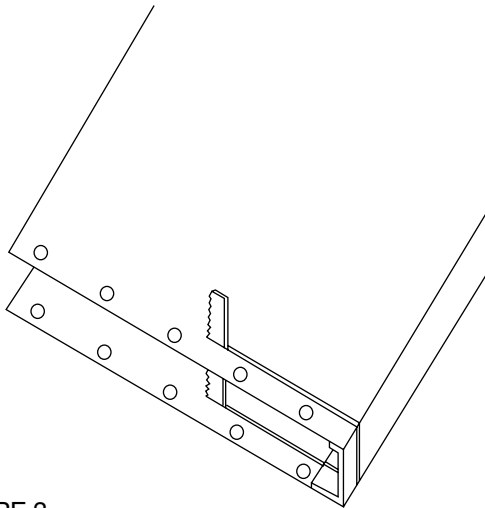
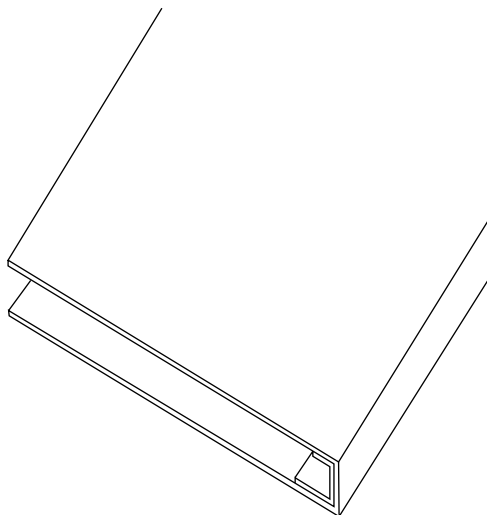


FIGURE 3



**FIGURE 1 — 3
CUT-OFF TOP OR BOTTOM**

1. If cut-off is to be 3/4" or less, locate spotwelds on surface of skin by sanding lightly with a vibrating sander and drill out welds using a 1/4" or 5/16" diameter bit and remove end channel reinforcing. Scribe the cut-off line on one face and one edge of the door. If cut-off is greater than 3/4" there is no need to remove end channel.
2. Select a metal cutting sabre saw blade long enough to cut one face at a time. With the door lying flat, cut the scribed line and discard the cut-off piece. See Figure 2.
3. Dress all edges with a file and insert a new end channel into position with flanges flush with end of door and clamp.
4. Using a wire welder, weld approximately 1/4" lengths along the edges of the face skin and end channel flanges and fill in any exposed drill holes. Dress weld with a disc grinder and/or file and fill and paint exposed metal surfaces where necessary. See Figure 3.

CUTS GREATER THAN 3/4" DEPTH

FIGURE 1

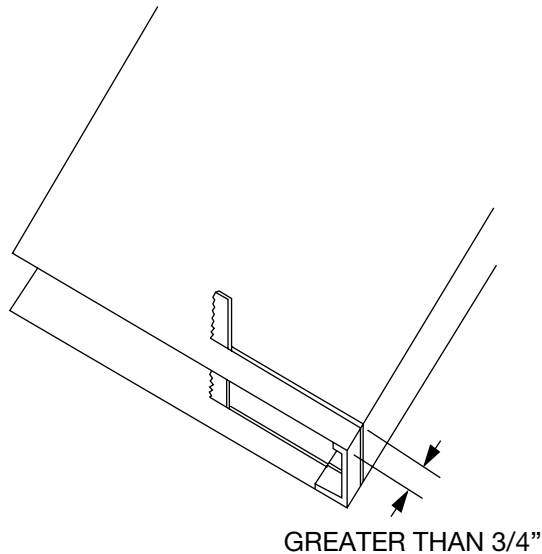
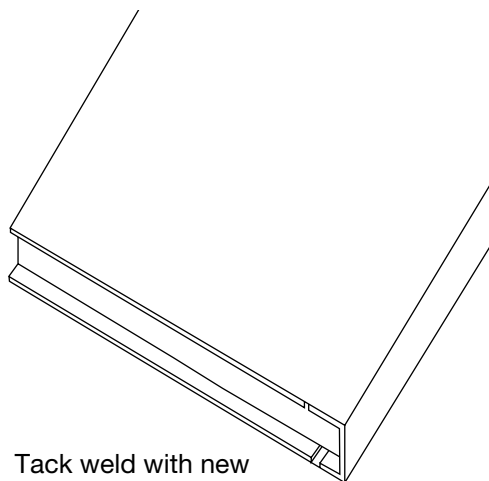


FIGURE 2



Tack weld with new
end channel flanges
flush with face skins.

**FIGURE 1 & 2
FOR CUTS GREATER THAN 3/4" DEPTH**

1. If depth of required cut is greater than 3/4", measure and scribe the cut line on both faces and both edges of the door.
2. Select a metal cutting sabre saw blade long enough to cut one face at a time. With the door lying flat cut the scribed line and discard the cut-off piece including the end channel. De-burr the cut edge with a file. See Figure 1.
3. Insert a new end channel, sized to the proper door width, clamp in position with the channel flanges flush with the cut face skin edges and tack weld along the edge of each face skin (taking care to avoid undercutting). See Figure 2.
4. Dress all welds with a disc grinder and saw cut edges with a file.
5. Fill and paint exposed metal surfaces where necessary.

GLASS MOLDING INSTALLATION

FIGURE 1

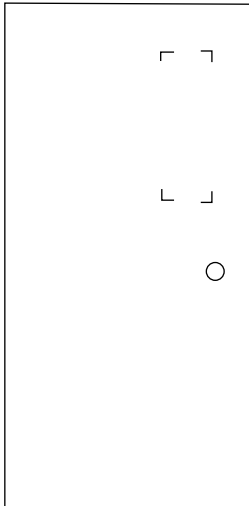


FIGURE 2

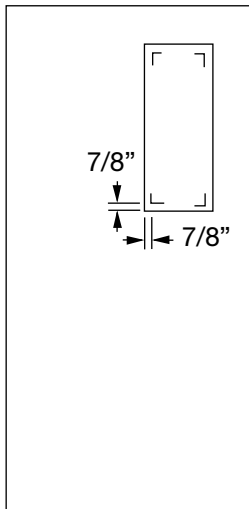
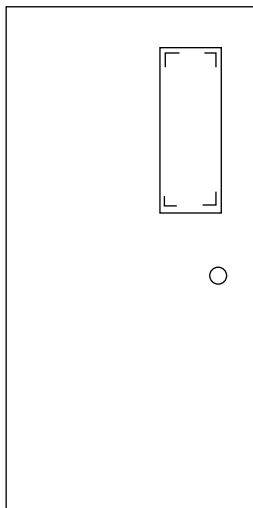


FIGURE 3



**FIGURE 1 — 3
GLASS MOLDING INSTALLATION**

NOTE: It is not recommended to modify Curries Type 747 Doors due to the problems involving the steel stiffened core construction.

DOOR CUT-OUT PREPARATION

1. Select type, size and location of glass to be used.

NOTE: Positively identify top of door and locate window cut-out accordingly.

2. Lay out and scribe the corner outlines of the visible portion of the glass to be used, on both faces of the door in the desired location.

TYPE 1 & 2

- a. Locate and scribe an outline extending 7/8" beyond the visible glass outline on all four sides. The size of the cut-out to be made will be 1 3/4" greater than the size of the visible portion of the glass to be used, both in length and width. See Figure 1.

TYPE 9 & 10

- b. Locate and scribe an outline extending 1" beyond the visible glass outline on all four sides. The size of the cut-out to be made will be 2" greater than the size of the visible portion of the glass to be used, both in length and width. See Figure 1.
4. Drill two holes, large enough to accept a sabre saw blade, in diagonally opposite corners of cut-out on each door face. See Figure 2.

GLASS MOLDING INSTALLATION

FIGURE 4

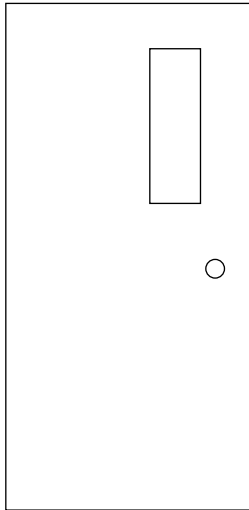


FIGURE 4 & 5

GLASS MOLDING INSTALLATION (continued)

- Set depth of saw stroke so the core material of the door will be cut just past the center of the door thickness on each face cut. Cut inside the scribed lines from each hole to the two adjacent corners on both faces. Remove the cut-out section of the door. See Figure 4.

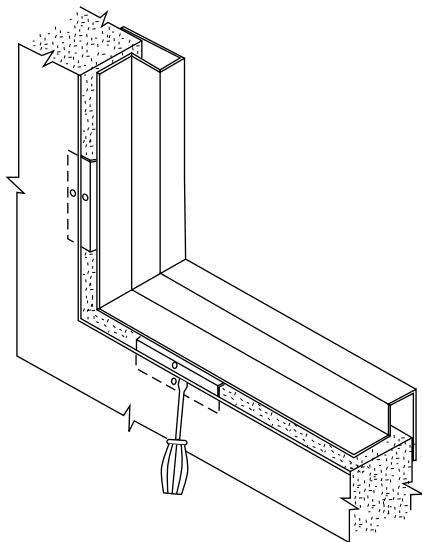
NOTE: GLASS MOLDINGS

It is recommended that you order glass molding kits prefabricated for specific openings size direct from the factory.

NOTE: U.L. GLASS KITS

Before installing glass molding into a fire labeled door, insert proper number of U.L. sub-channel clips (P/N WM04 - See chart) on the top, bottom and sides of the cut-out. If sub-channel clips are used, the pop rivet may be omitted since the clips make the molding fit snugly. Also, the outside molding profile, (Figure 7) should be installed on the secure side of the door. On exterior doors this should be the outside of the door.

FIGURE 5



KIT INSTALLATION – TYPE 1 & 2

- Insert outside portion of molding into the cut-out opening from outside of door. Use a screwdriver or similar tool to pry the retaining clips over the door face and into position. Drill 1/8" diameter hole into existing retaining clip hole and through door skin. See Figure 5.
- Then using pop rivet gun and 1/8" diameter pop rivet, secure outside profile of window kit to face sheet of door by inserting pop rivet through hole previously drilled.

GLASS MOLDING INSTALLATION

FIGURE 6

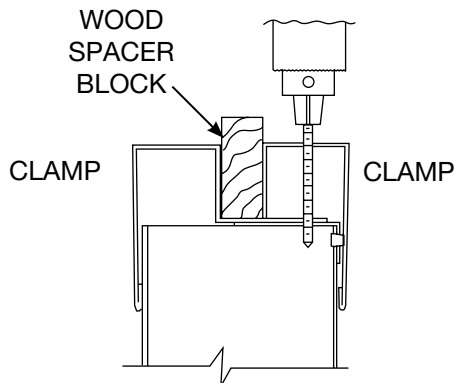


FIGURE 7

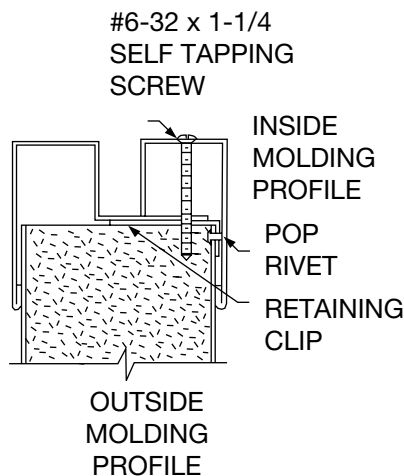


FIGURE 6 & 7

KIT INSTALLATION – TYPE 1 & 2 (continued)

3. Clamp the two molding halves together over wood spacer blocks cut the width of the glass pocket. With a No. 36 drill bit, or by using the 6-32 x 1-1/4 self drilling screw, drill and install all mounting screws through the countersunk holes provided and into the bottom flange of the outside profile, making sure screws are drilled to the inside of the door face. Then remove screws for glass installation. Make sure correct number of screws are used for label doors (see Chart). See Figure 6 & 7.
4. Remove inside molding, apply glazing compound to inner face of outside molding as required and install glass. Apply glazing compound to glass around periphery of inner surface and insert inside molding.
5. Install and tighten all #6-32 mounting screws.

SCREWS REQUIRED FOR U.L. LABEL

Screws to be located not more than 2 1/2" from each inside corner and not more than 8 1/4" between screws for U.L. label doors. Chart shows number of screws required for two opposite sides of molding according to height or width as shown. Add quantity shown for height and width of visible glass for total screws required.

U.L. SUBCHANNEL CLIPS REQUIRED

Quantity shown is for two opposite sides of cut-out. Add quantity shown for height and width of visible glass for total clips required.

HEIGHT OR WIDTH	Q'TY OF 2 SIDES
6" or Less	2
7" to 13 "	4
14" to 22"	6
23" to 30"	8
31" to 39"	10
40" to 47"	12
48" to 56"	14
57" to 64"	16

HEIGHT OR WIDTH	Q'TY OF 2 SIDES
6" or Less	2
7" to 13 "	4
14" to 22"	6
23" to 30"	8
31" to 39"	10
40" to 47"	12
48" to 56"	14
57" to 64"	16

HEIGHT OR WIDTH	Q'TY OF 2 SIDES
4" to 6"	2
7" to 16"	4
17" to 28"	6
29" to 36"	8

HEIGHT OR WIDTH	Q'TY OF 2 SIDES
4" to 6"	2
7" to 16"	4
17" to 28"	6
29" to 36"	8

LOUVER INSTALLATION

FIGURE 1

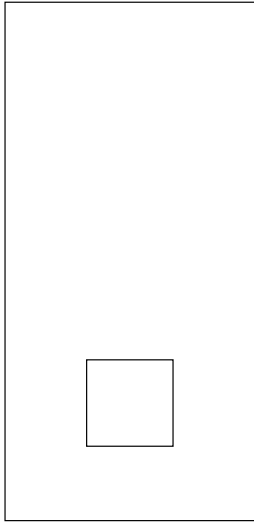


FIGURE 2

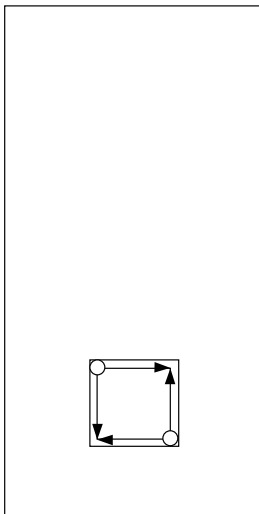
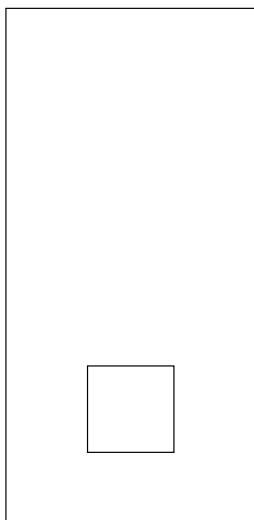


FIGURE 3



**FIGURE 1 – 3
LOUVER INSTALLATION**

NOTE: It is not recommended to modify Curries Type 747 Doors due to the problems involving the steel stiffened core construction.

1. Select louver size and location on door.
2. Lay out and scribe opening cut-out on both sides of door. Cut-out size is equal to the specified louver size.
3. Drill two holes, large enough to accept a sabre saw blade, in diagonally opposite corners of cut-out on each door face. See Figure 2.
4. Set depth of saw stroke so the core material of the door will be cut just past the center of the door thickness on each face cut. Cut inside the scribed lines from each hole to the two adjacent corners on both faces and remove the cut-out section of the door.
5. Square the corners and de-burr the cut-out edge surfaces with a file.

LOUVER INSTALLATION

FIGURE 4

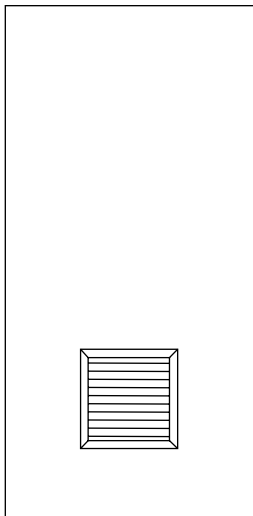


FIGURE 4
LOUVER INSTALLATION (continued)

6. Insert the louver assembly into the cut-out and locate, center punch drill all mounting holes according to the type and size of the screw or bolt furnished. See Figure 4.

RE-LOCATE HINGE REINFORCEMENT

FIGURE 1

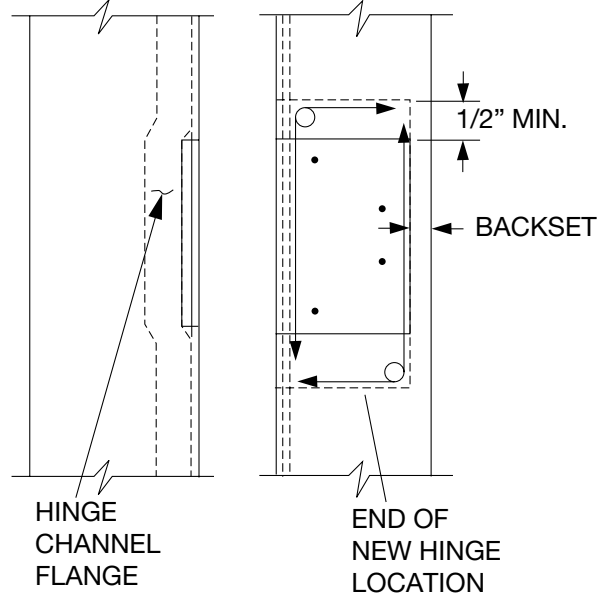


FIGURE 1 — 3
RE-LOCATE HINGE REINFORCEMENT
(Dimensions shown for 1 3/4" doors.)

1. Locate and scribe the end of the new hinge opening which extends beyond the current cut-out. Scribe a line also 1/2" minimum beyond the opposite end of the current cut-out, past the offset of the reinforcement. Then scribe lines extending the backset edge to the new end lines. Center punch and drill two holes in diagonally opposite corners to accept sabre saw blade. See Figure 1.

NOTE: The hole next to the face cut-out side (open side) must be just inside the flange of the hinge channel. This flange is not to be cut out.

- Using a sabre saw, cut adjacent to the scribed lines along the inside of the hinge channel flange and along the backset edge to the corners and lift out the loose pieces. On the ends, cut around the bend just to the depth of the original face cut-out, NO DEEPER. See Figure 2.

The face cut-out will be trimmed after welding the new reinforcement.

2. Drill three 1/4" diameter holes near each end of the enlarged cut-out for plug welding the new reinforcement. See Figure 3.

NOTE: Be sure to de-burr these holes on the inside of the hinge channel.

FIGURE 2

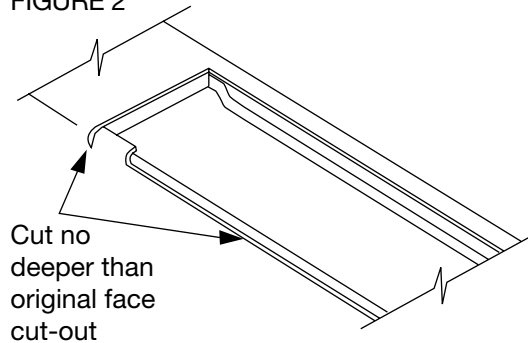
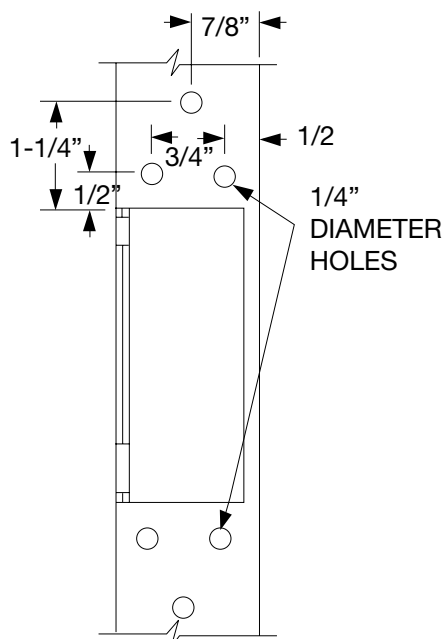


FIGURE 3



RE-LOCATE HINGE REINFORCEMENT

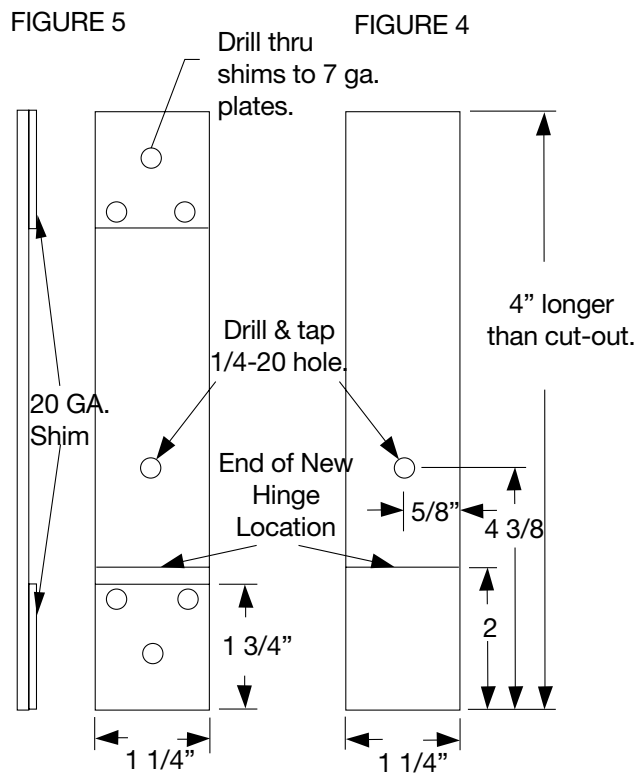


FIGURE 4 — 7
RE-LOCATE HINGE REINFORCEMENT (continued)

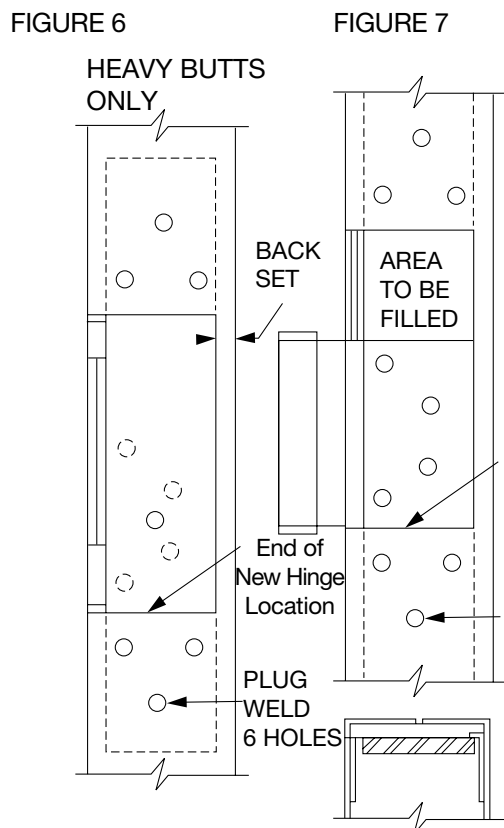
- To fabricate the new reinforcing, cut a length of 7 gauge flat steel 1-1/4" wide by 4 " longer than the enlarged cut-out. Scribe a line 2 " from the end to align with the end of the new hinge location. Drill and tap a 1/4-20 threaded hole 4-3/8" from the same end to accept a 1/4-20 bolt for use as a handle for plug welding. This hole must not interfere with hinge butt screw holes to be tapped later. See Figure 4 & 6.

NOTE: Only if heavy hinge butts are to be used, tack weld two 20 gauge shims as shown in Figure 5. Locate plug weld locations and drill through shims to 7 gauge plate for maximum strength of weld.

- Screw a 1/4-20 bolt into the tapped hole and insert the reinforcing into position, hold the backset edge flush and align scribed end line with end of cut-out. Make sure reinforcing is flat against the hinge channel and plug weld through (6) 1/4" diameter holes. See Figure 6.

NOTE: Before welding, make sure all edges and holes are de-burred so reinforcing will lie square against the backset and flat against the inside surface of hinge channel.

- Remove the 1/4-20 bolt and trim the face cut-out flush with reinforcing surface using short sabre saw blade.
- Locate the hinge butt in position and using the holes as a guide, drill and tap (4) #12-24 holes and install four hinge screws. See Figure 7.
- Measure the size of the area requiring a filler plate.



RE-LOCATE HINGE REINFORCEMENT

FIGURE 8

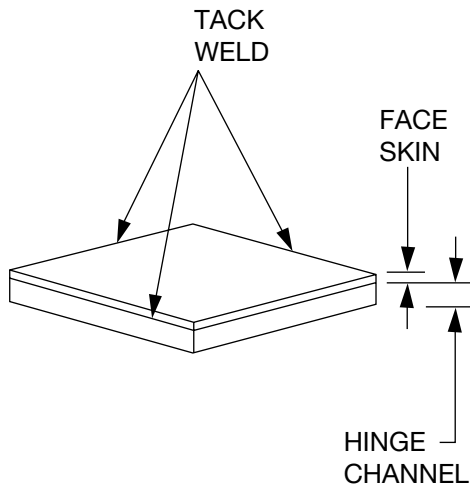


FIGURE 8 & 9

RE-LOCATE HINGE REINFORCEMENT (continued)

8. Determine the gauge thickness of the hinge channel and face skin steel and cut a rectangle of each gauge material equal to the size measured in Step 7.

Align the two pieces, clamp and tack weld at three edges omitting the edge to be adjacent to the hinge butt. File the plate to size and place in the opening with the unwelded side toward the hinge butt. See Figure 8.

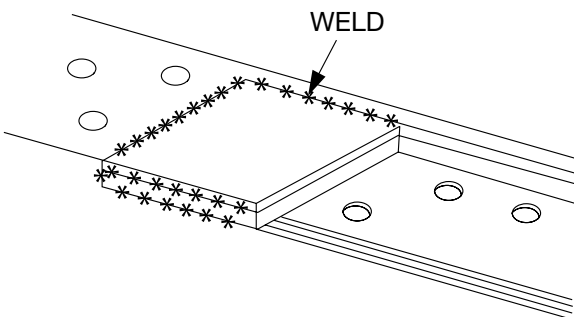
9. Remove the hinge butt to prevent damage from the welder. Hold the filler plate in position and tack weld. Then weld intermittently on three sides.

NOTE: Do not weld side which will be adjacent to hinge butt. See Figure 9.

10. Grind all welds flush, fill all voids, finish smooth and prime paint exposed surfaces.

NOTE: The depth of the recess of the new reinforcement will be controlled by the gauge thickness of the continuous hinge channel plus the face skin for standard hinge butts. For doors with 18 gauge face skins the recess will be approximately 1/64" deeper than required. This means the lock edge clearances will be increased by the same amount. Clearance can be adjusted with the use of hinge shims according to door installation instructions on page 2 of Installation Instruction Section.

FIGURE 9



HINGE PREPARATION FOR REPLACEMENT DOOR

FIGURE 1

FIGURE 2

FIGURE 3

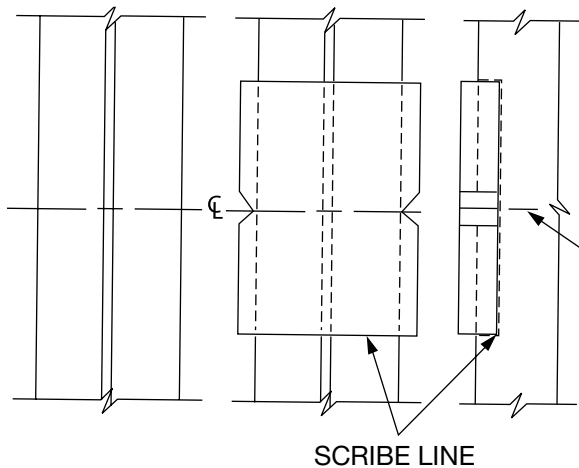


FIGURE 4

FIGURE 5

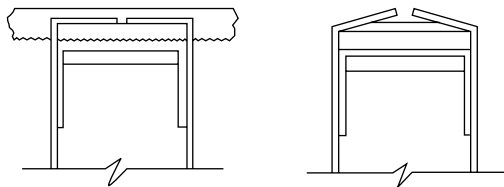
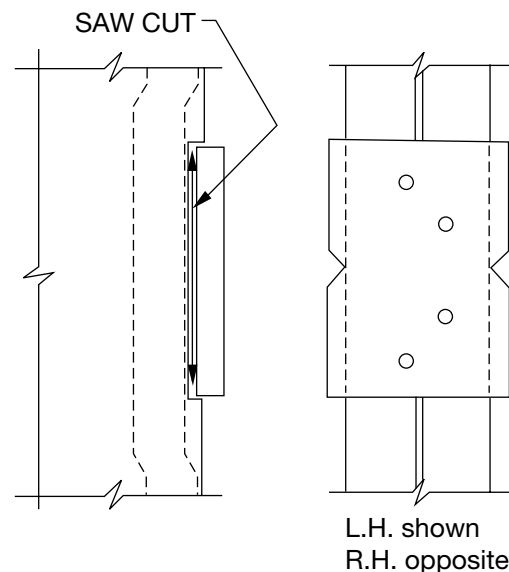


FIGURE 6

FIGURE 7



**FIGURE 1 – 7
HINGE PREPARATION FOR REPLACEMENT DOOR**

1. Identify top of door by locating end channel with no weep holes. Identify hinge side door by examining gap in door skins and noticing clearance between door skins and hinge rail where the offsets are located.
2. Locate the centerline of hinge preparation. See Figure 1. Mark face of door at centerline of desired hinge location. See Figure 3. Position hinge fixture over edge of door, aligning notch in fixture with mark. See Figure 2. Using the fixture as a guide, scribe a line at each end and also along each side of the fixture. See Figure 3.
3. Make a cut on the scribed line with a hacksaw, kett saw and/or equal tool, across the entire width of the door. Cut door skin down to the scribe line on face of door. See Figure 4.
4. Bend up skins between saw lines, enough to allow the saw blade to contact the skin. See Figure 5.
5. Remove skin by cutting along scribe line to obtain a flush surface with the hinge rail. See Figure 6.
6. Position fixture over cut-out so the holes are in the correct orientation for proper handing of the door. Drill holes in edge of door. See Figure 7.
7. Place hinge filler plate in cut-out, set hinge on top, insert and tighten screws. Hinge filler plate provides proper shimming so hinge will be flush with edge of door.

NOTE: Ship loose part.
Filler Plate — CD009352
Hinge Fixture — CD008932

FRAME HARDWARE PREPARATION

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FRAME HARDWARE

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CUT OUT FOR STRIKE OR HINGE

FIGURE 1

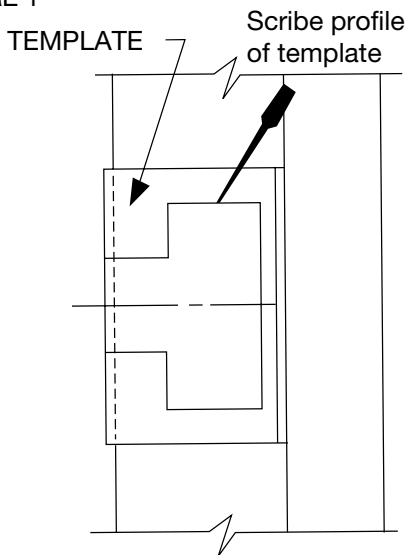


FIGURE 2

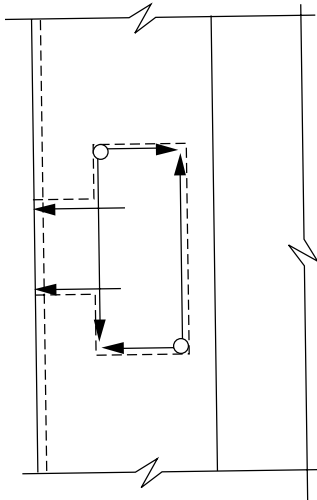
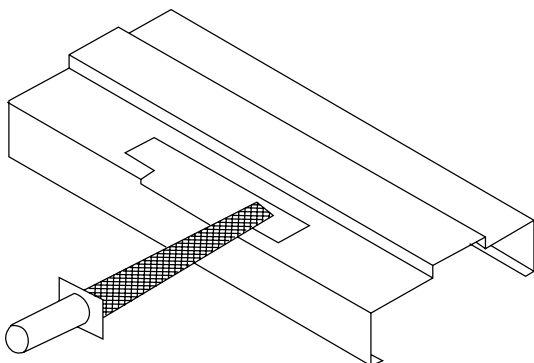


FIGURE 3



**FIGURE 1 – 3
CUT-OUT FOR STRIKE OR HINGE**

1. Select the appropriate template for the cut-out.
2. Locate and scribe the horizontal centerline for the cut-out on the appropriate rabbet of jamb or head. For strike cut-out this will be at the same location as the latch bolt as measured from floor. See Figure 1.
3. Align the cut-out template with the backset gauge surface against the frame stop and match the centerline mark with the scribed centerline on the frame. Scribe the cut-out shape.
4. Drill two holes in diagonally opposite corners large enough to accept a sabre saw blade and cut out the rectangular portion of the opening by sawing toward the adjacent two corners from each hole. See Figure 2.
5. For lipped strike profiles make two saw cuts toward frame face around bend to proper depth indicated by the scribed line on the face.
6. With the saw blade perpendicular to the frame face starting at the edge of the lip profile, cut toward (and adjacent to) the scribed line on the face to the opposite corner. Then square the initial corner with the saw blade. Dress the entire opening profile to size and squareness with the file. See Figure 3.

NOTE: Check the fit of the actual piece of hardware in the cut-out and file as needed.

REINFORCEMENT WELDING

FIGURE 1

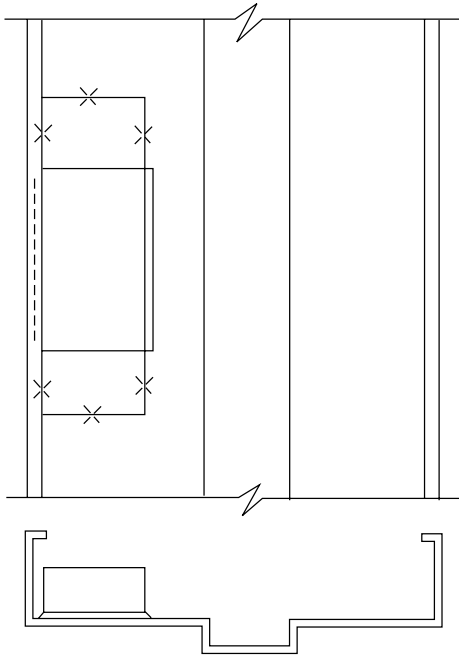
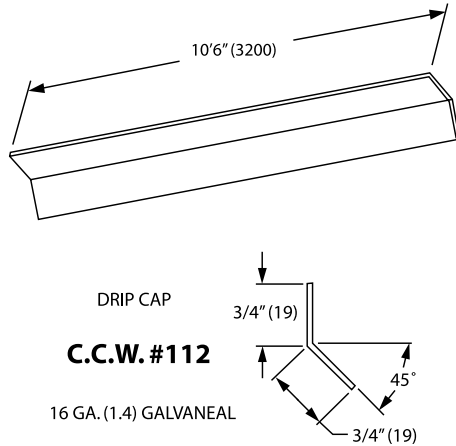


FIGURE 1
REINFORCEMENT WELDING

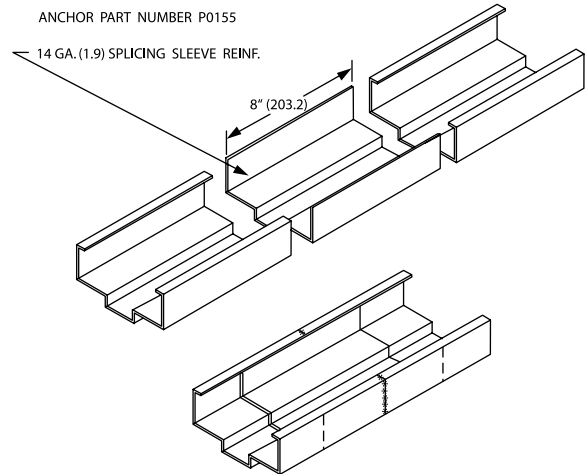
1. Select the appropriate reinforcement or cover box assembly for the opening. Some reinforcements have small projections that are used for resistance welding the part to the frame at the factory. Grind these projections flush with the surface of the part prior to arc welding.
2. Assemble the appropriate strike plate or hinge leaf to the reinforcement. Locate into position in the cut-out opening. Clamp the reinforcement and weld 3, approximately 1/4" to 3/8" long, tack welds along the edges of the reinforcement tabs. See Figure 1.
3. Grind exposed surfaces, fill voids with body filler, grind and sand smooth. Prime paint all exposed metal.

FRAME HARDWARE

CCW-DRIP CAP CCW 112-10'6" LENGTHS

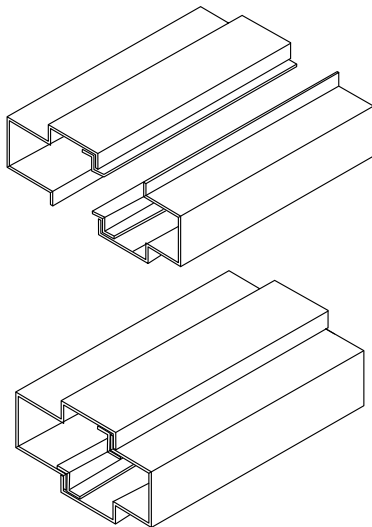


SPLICE CONNECTION HEAD OR JAMB

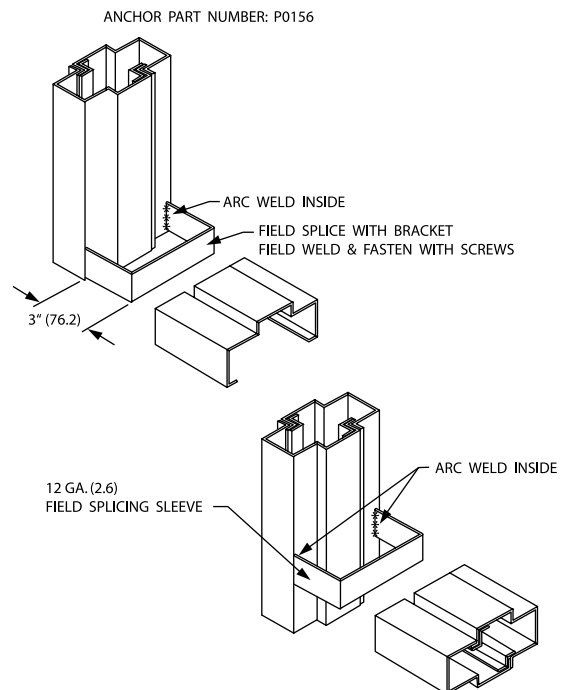


1. FIT SPLICING SLEEVE REINF. HALFWAY INTO ONE SIDE AND TACK WELD IN PLACE.
2. SLIP OTHER SIDE OVER SPLICING SLEEVE REINF. AND ALIGN SEAMS FOR STRAIGHTNESS.
3. TACK WELD SPLICING SLEEVE REINF. INSIDE AND TACK WELD OUTSIDE SEAM AT BOTH FACES.
4. CONTINUOUS WELD SEAM - GRIND AND FINISH SMOOTH.

MULLION CONSTRUCTION



FIELD SPLICE CONNECTION WITH BRACKET



FRAME HARDWARE

REMOVABLE VERTICAL MULLION BRACKET

ANCHOR PART NUMBER: P0090

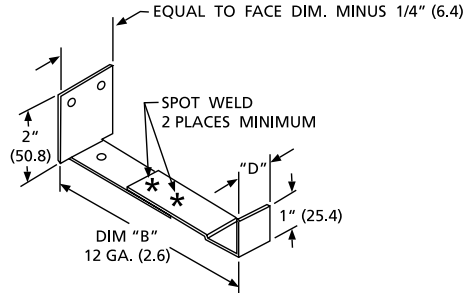
MULLION BRACKET IS USED
AT THE TOP AND BOTTOM OF FRAME

ATTACH MULLION
BRACKET TO FRAME

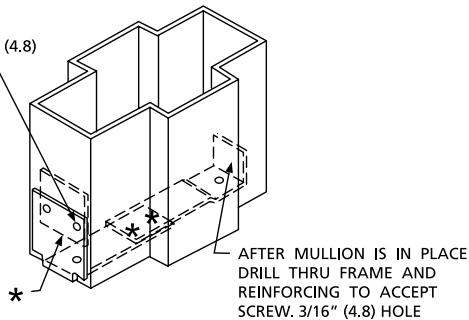
NOTCH MULLION FACE TO ALLOW
DIMENSION "D" TO PASS THRU.

SLIDE MULLION IN PLACE

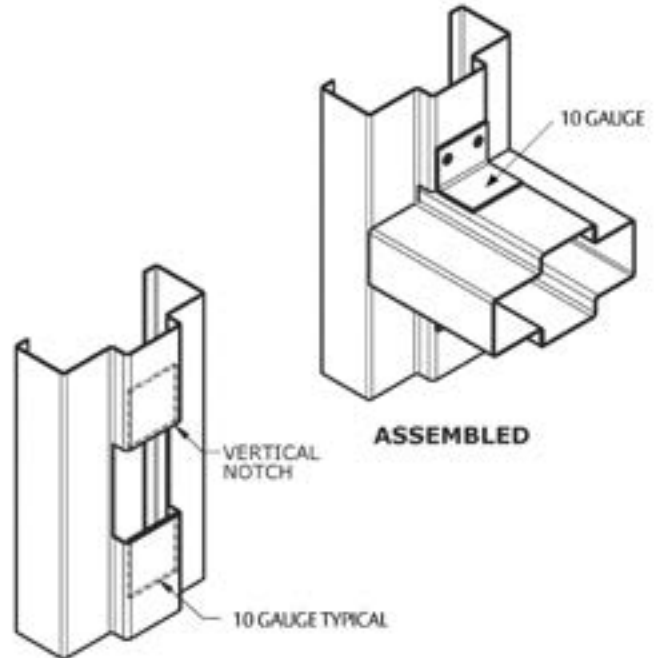
DIM. "B" = JAMB DEPTH - FRAME GAUGE THICKNESS
DIM. "D" = DETERMINED BY FACE DIMENSION



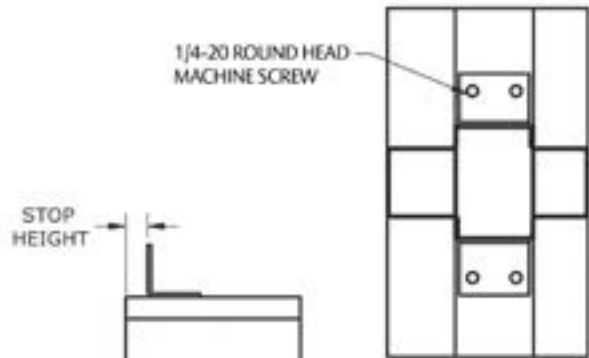
DRILL 3/16" (4.8)
2 HOLES



REMOVABLE HORIZONTAL MULLION BRACKET



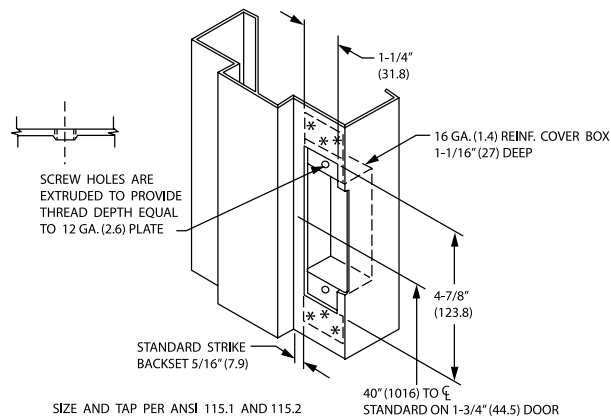
VERTICAL RAIL



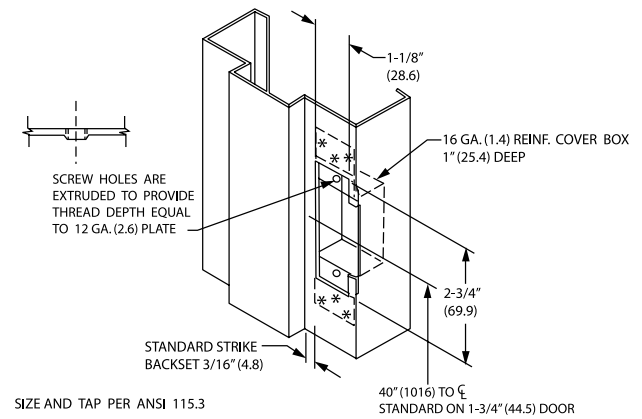
HORIZONTAL MULLION RAIL

FRAME HARDWARE

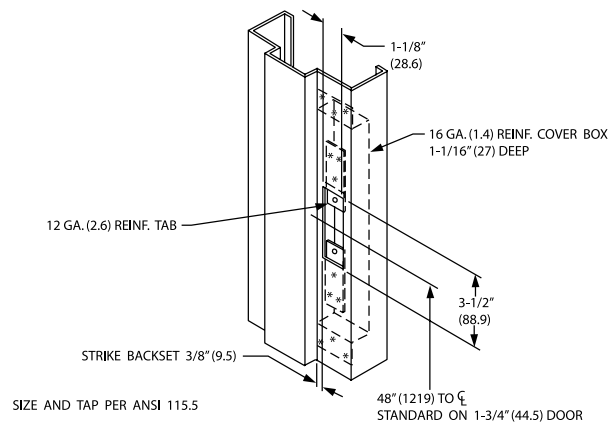
E1 STRIKE REINFORCEMENT (ANSI A115) 1-1/4" x 4-7/8"



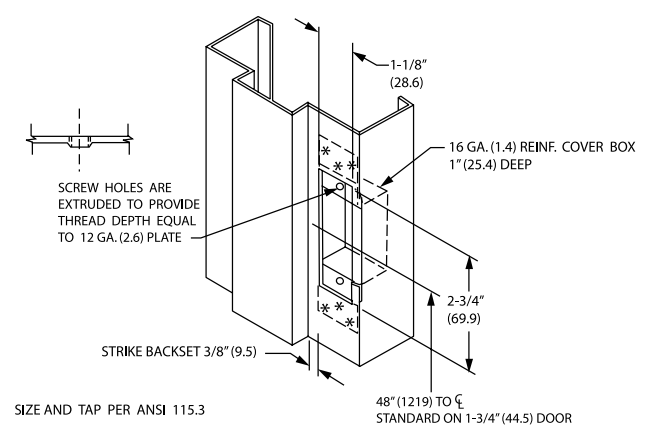
E2 STRIKE REINFORCEMENT (ANSI A115) 1-1/8" x 2-3/4"



E3 DEADLOCK STRIKE REINFORCEMENT (ANSI A115) 1-1/8" x 3-1/2"

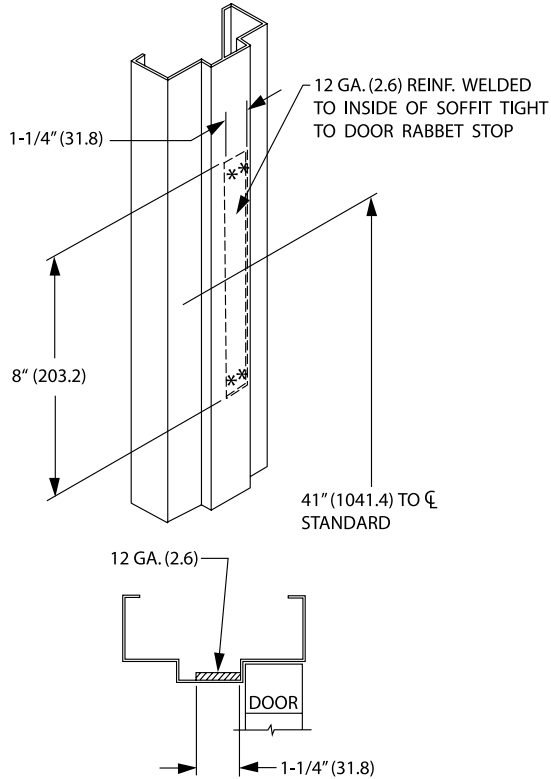


E4 DEADLOCK STRIKE REINFORCEMENT (ANSI A115) 1-1/8" x 2-3/4" NO LIP

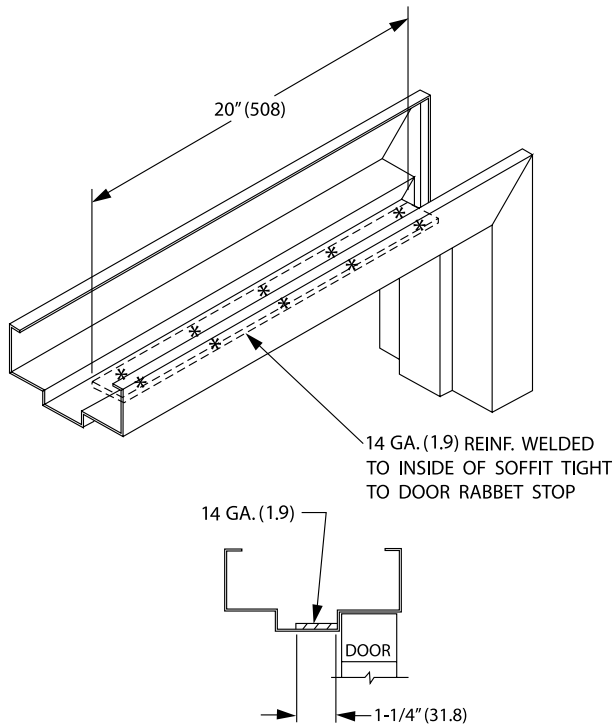


FRAME HARDWARE

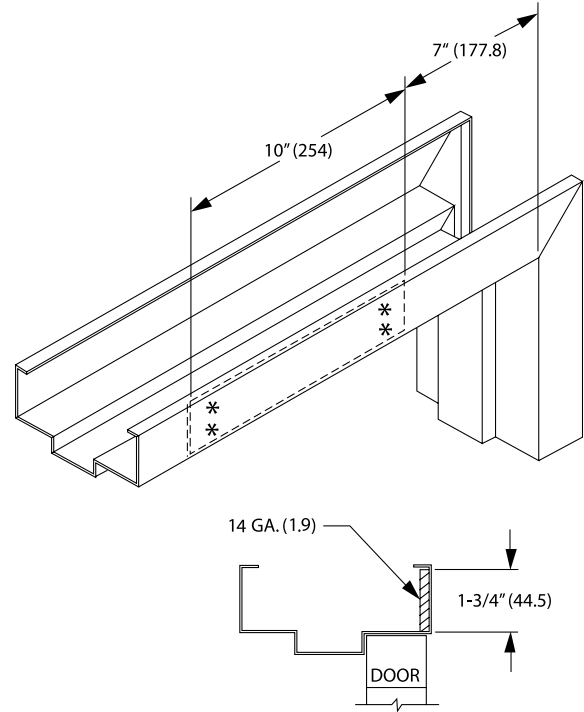
E8 RIM EXIT REINFORCEMENT



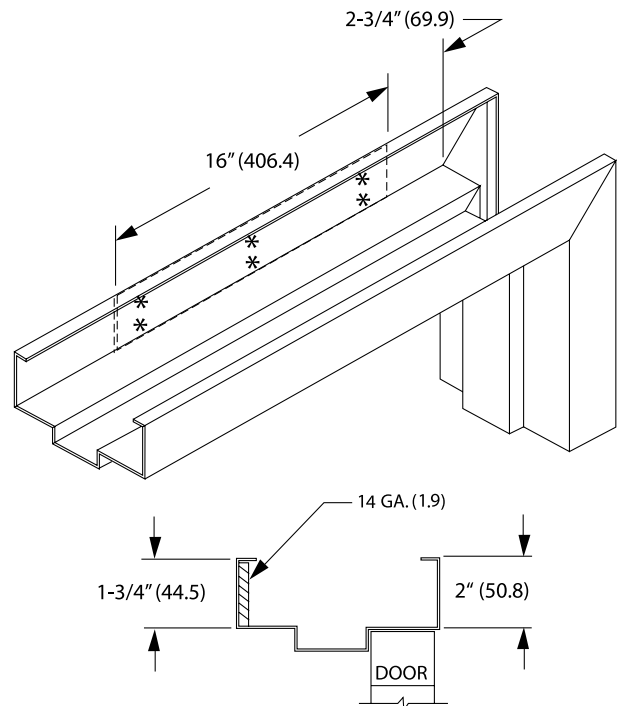
E11 PARALLEL ARM MOUNTING 14 GAUGE CLOSER REINFORCEMENT



E10 STANDARD MOUNTING 14 GAUGE CLOSER REINFORCEMENT

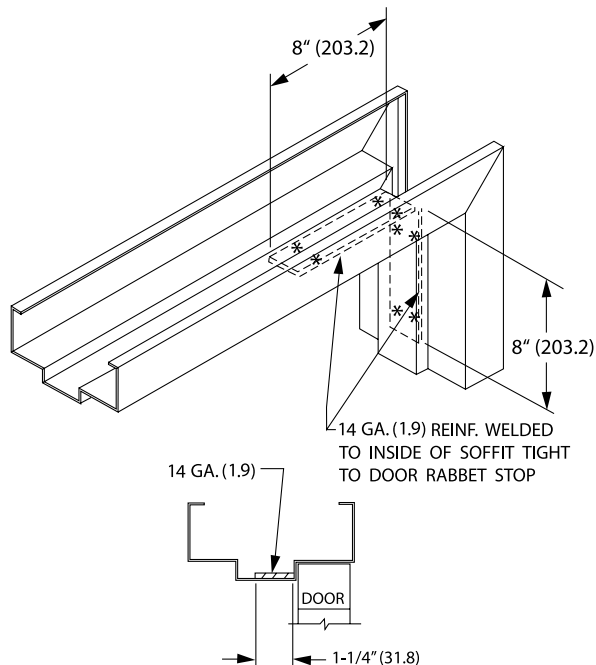


E12 TOP JAMB MOUNTING 14 GAUGE CLOSER REINFORCEMENT

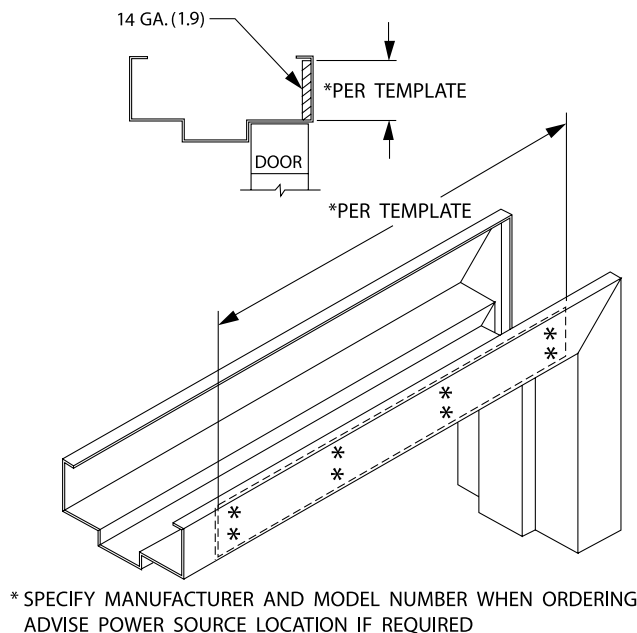


FRAME HARDWARE

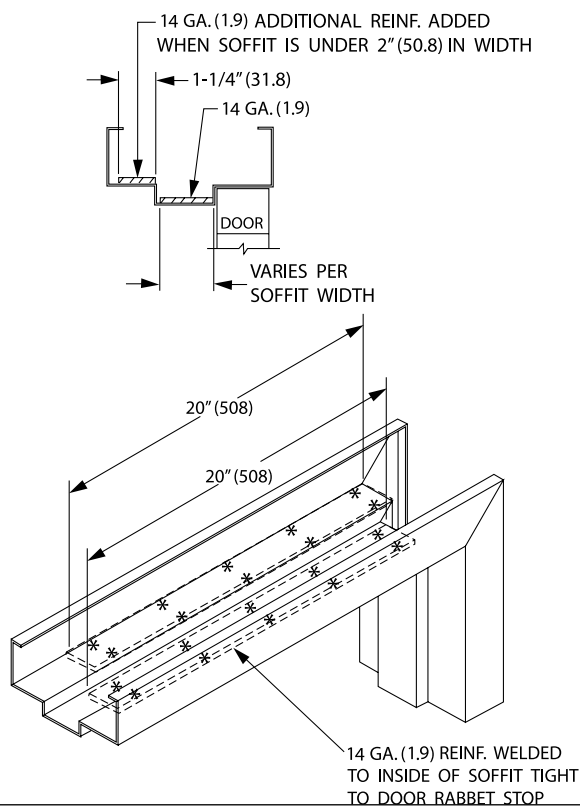
E13 CORNER BRACKET MOUNTING 14 GAUGE CLOSER REINFORCEMENT



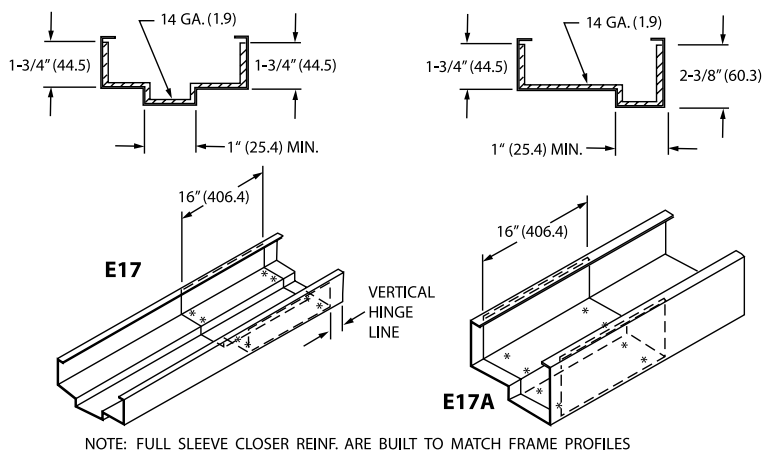
E15 ELECTRIC-DOOR HOLDER-RELEASE/CLOSER 14 GAUGE REINFORCEMENT



E16 DOUBLE PARALLEL ARM 14 GAUGE CLOSER REINFORCEMENT



E17 14 GAUGE FORMED FULL SLEEVE CLOSER REINFORCEMENT



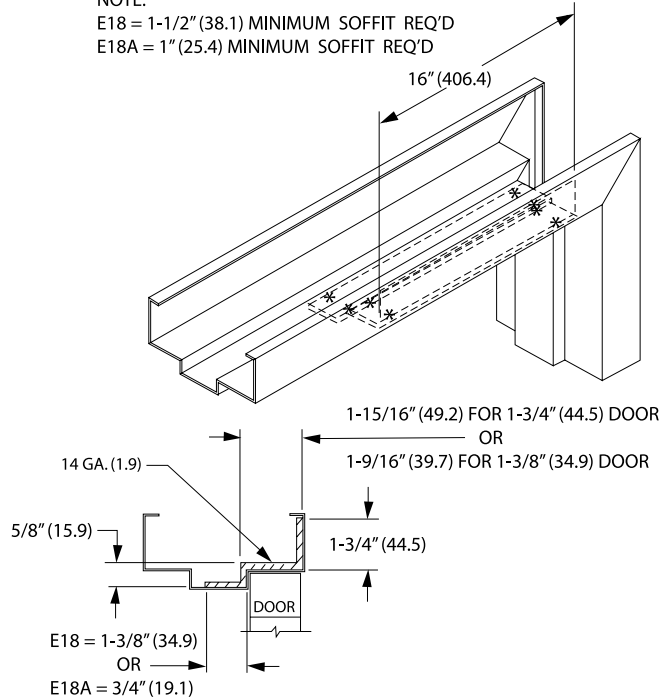
FRAME HARDWARE

E18 14 GAUGE FORMED HALF SLEEVE CLOSER REINFORCEMENT

NOTE:

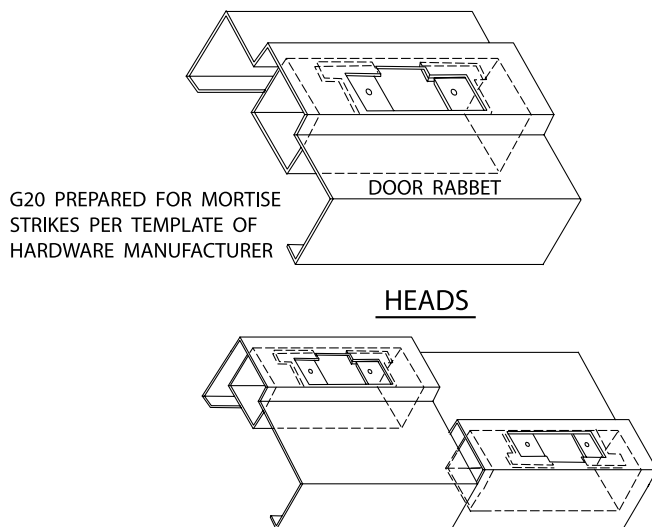
E18 = 1-1/2" (38.1) MINIMUM SOFFIT REQ'D

E18A = 1" (25.4) MINIMUM SOFFIT REQ'D



NOTE: HALF SLEEVE CLOSER REINF. ARE BUILT TO MATCH FRAME PROFILES

G20 VERTICAL ROD EXIT MORTISE STRIKE PREPARATION

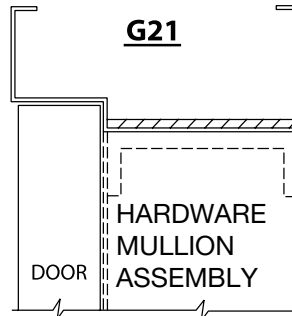


G21 - G22 REMOVABLE HARDWARE MULLION

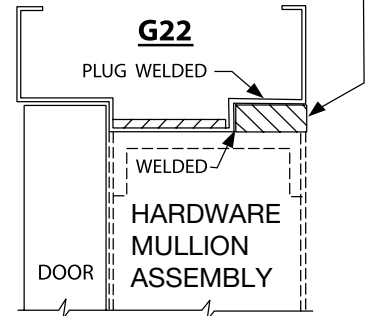
MULLION TOP BRACKET MOUNTING SCREWS TO BE DRILLED AND TAPPED IN FIELD BY HARDWARE INSTALLER.

5/8" (15.9) C.R.S. FILLER BLOCK IS FURNISHED WHEN SOFFIT WIDTH IS TOO NARROW TO APPLY HARDWARE TO SOFFIT

G22 PLATE REINFORCEMENT USED WHEN SOFFIT IS GREATER THAN 2-1/4" (57.2) WIDE.

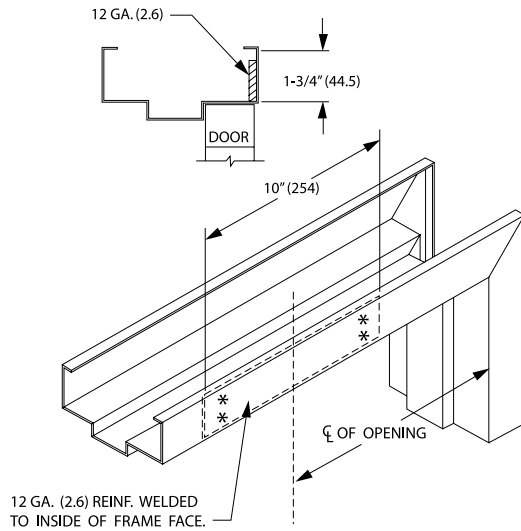


G22 PLATE REINFORCEMENT USED WHEN SOFFIT IS 2-1/4" (57.2) OR LESS.

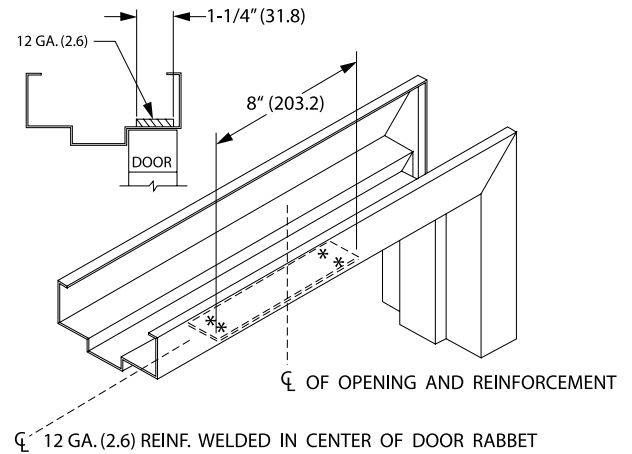


FRAME HARDWARE

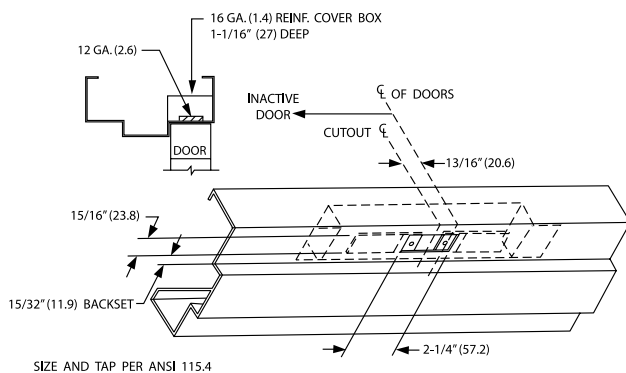
G24 COORDINATOR REINFORCEMENT



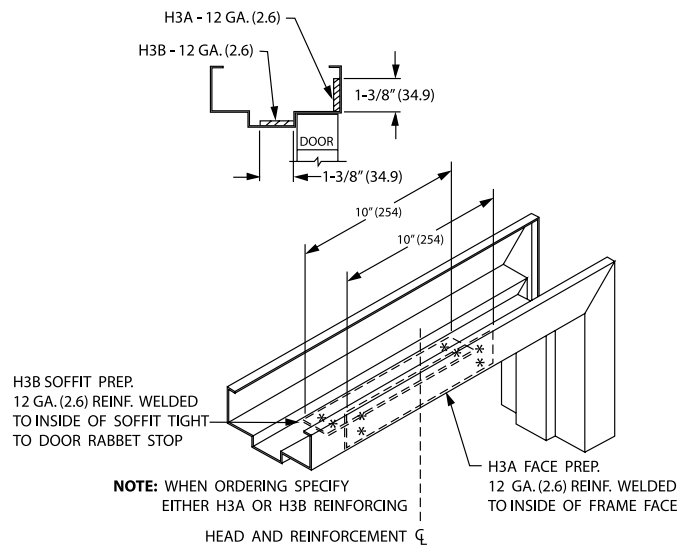
H1 FLUSH BOLT REINFORCEMENT



H2 FLUSH BOLT PREPARATION AND REINFORCEMENT (ANSI)



H3A - H3B SURFACE BOLT PREPARATION

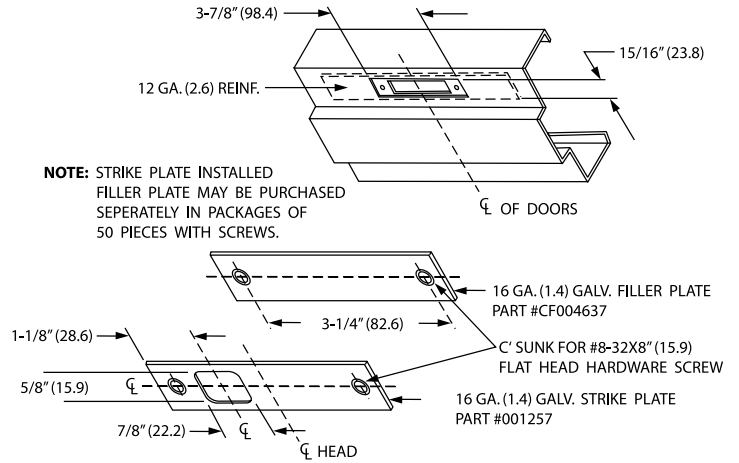


FRAME HARDWARE

H4 AUTO FLUSH BOLT

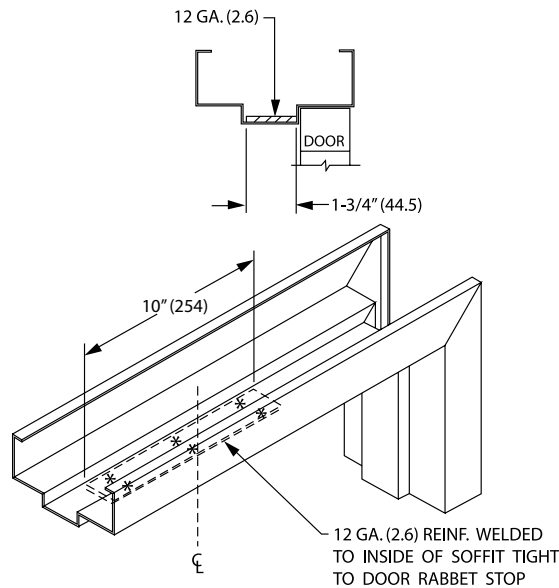
Preparation for automatic flush bolt is per hardware manufacturer's template. Please specify manufacturer and model number when ordering. Labeled if hardware is approved and prepped to template.

H5 NON-HANDED FLUSH BOLT



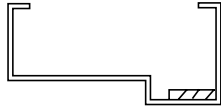
E5 RIM VERTICAL ROD SURFACE STRIKE REINFORCEMENT

E5 REINFORCING IS LOCATED ON CENTERLINE OF HEAD FOR PAIR FRAMES
AND ADJACENT TO STRIKE JAMB ON SINGLE SWING FRAMES.

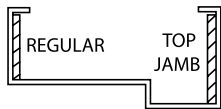


FRAME HARDWARE

DOUBLE EGRESS FRAME CLOSER REINFORCEMENT

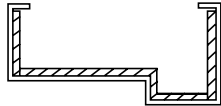


E11 - PARALLEL ARM MOUNTING
14 GA. (1.9)
20" (508) LONG

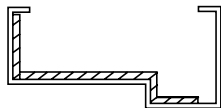


E10 - REGULAR MOUNTING
14 GA. (1.9)
10" (254) LONG

E12 - TOP JAMB MOUNTING
14 GA. (1.9)
16" (406.4) LONG

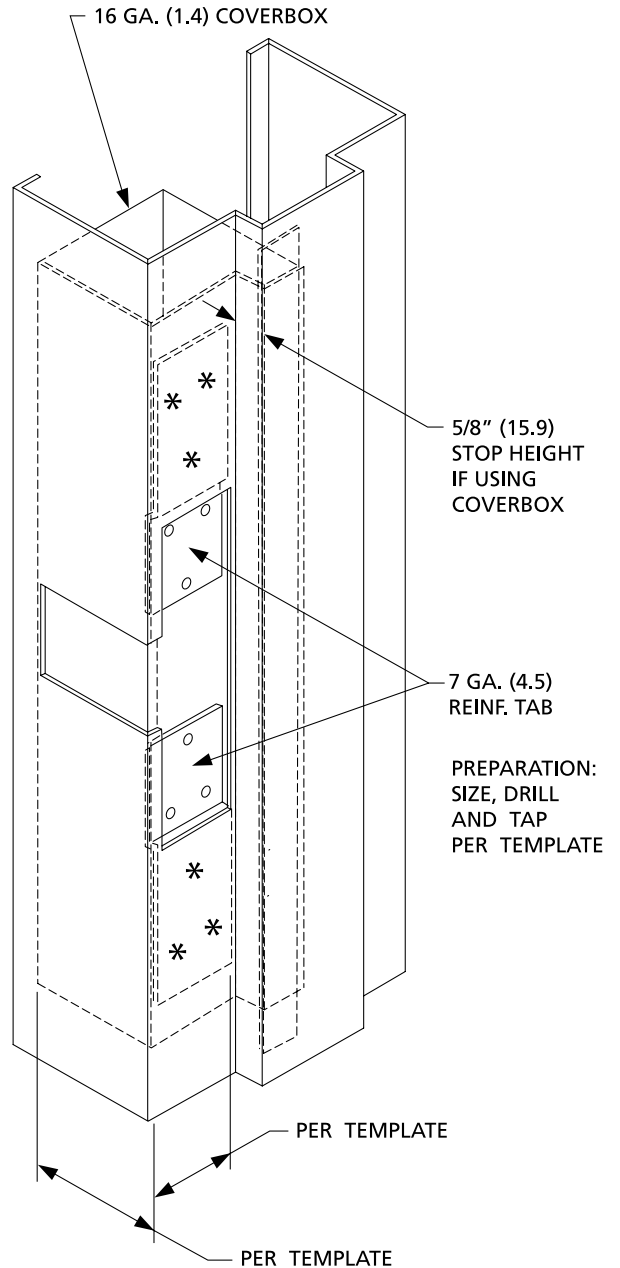


E17A - FULL SLEEVE
REGULAR, TOP JAMB
PARALLEL ARM MOUNTINGS
14 GA. (1.9)
16" (406.4) LONG



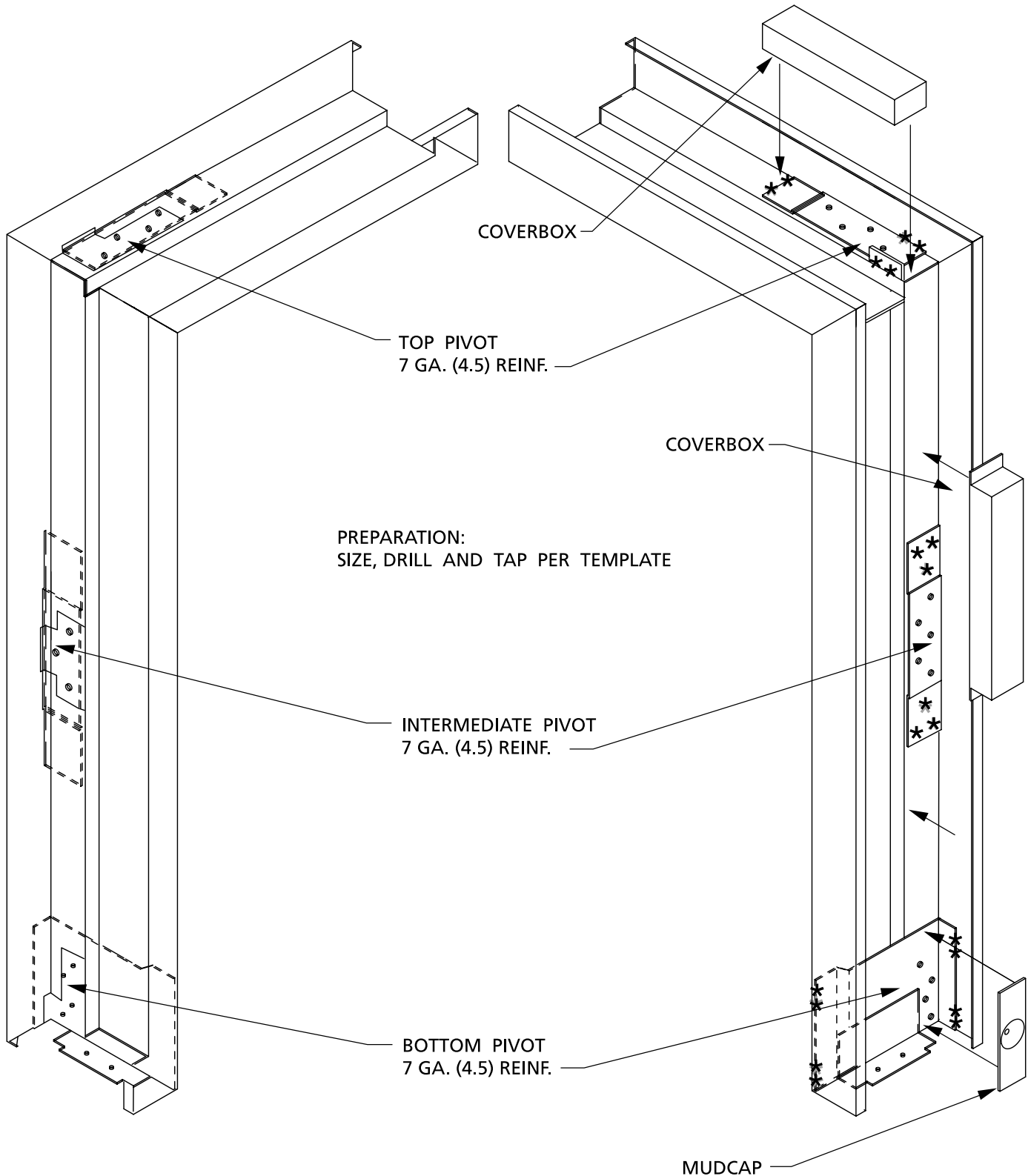
E18 - HALF SLEEVE
REGULAR, AND
PARALLEL ARM MOUNTINGS
14 GA. (1.9)
16" (406.4) LONG

POCKET PIVOT PREPARATION



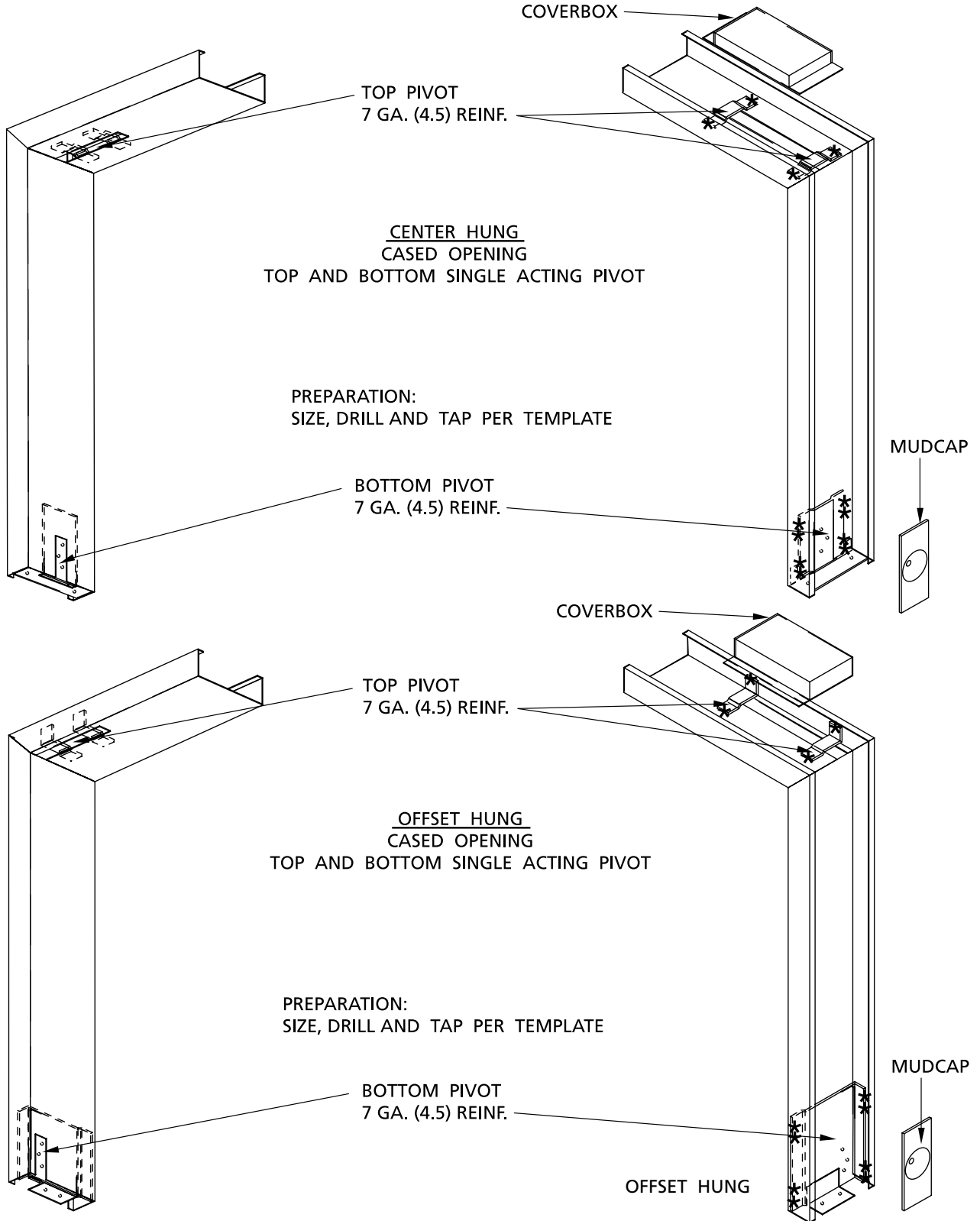
FRAME HARDWARE

FRAME PIVOTS — TOP, INTERMEDIATE, BOTTOM — SINGLE ACTING



FRAME HARDWARE

FRAME PIVOTS — TOP & BOTTOM — CENTER HUNG & OFFSET HUNG



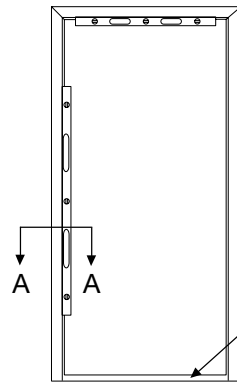
INSTALLATION INSTRUCTIONS

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RECOMMENDED ERECTION INSTRUCTIONS FOR STEEL FRAME

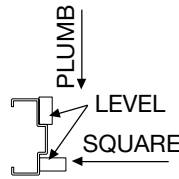
BRACING FRAMES BEFORE WALL CONSTRUCTION

NOTE: Shipping bars should not be used as spreader. Remove shipping bar before setting frame.



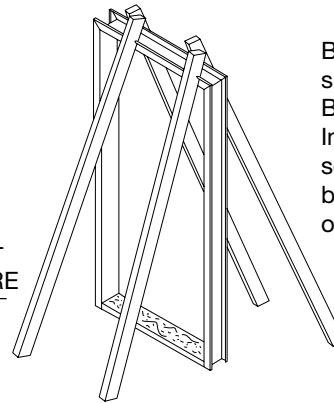
SECTION A-A

SPREADER



PLUMB

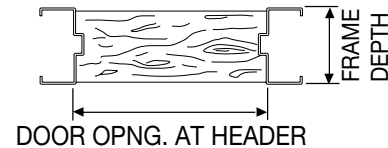
LEVEL
SQUARE



BRACING THE FRAME
Brace the frame as shown or shore to a structure above. Brace In The Direction Of Intended Wall. Plumb and square jambs. Install vertical brace to support header for openings over 4'0" wide.

PLUMBING THE FRAME

The contractor should be equipped with a carpenter level, square and spreader. Set the frame in desired location and level the header. Square jambs to header. Shim under jambs if necessary. With frame on line, set spreader and fasten jambs to floor through floor anchors.

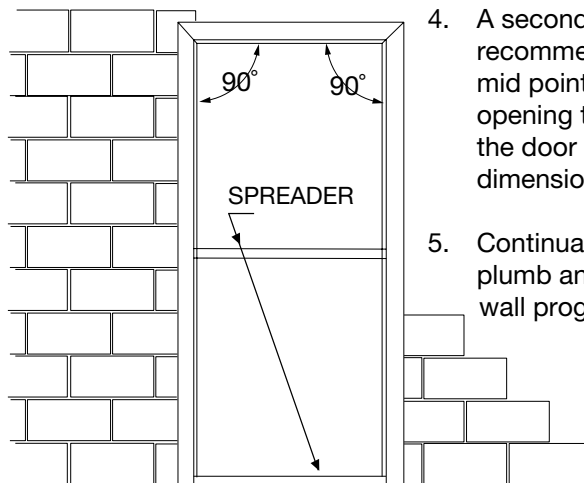


SPREADER

Typical wood spreader must be square and fabricated from lumber no less than 1" thick. Correct length is the door opening width between the jambs at the header (i.e., Single Door 3'0" = 36"). Cut clearance notches for frame stops. Spreader must be nearly as wide as frame depth for proper installation.

NEW MASONRY CONSTRUCTION

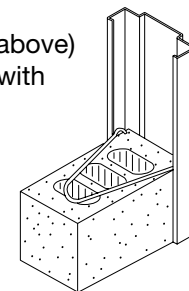
1. Assemble frame.
2. Set brace and plumb frame.
3. Install anchors. Grout frame in the area of the anchors (see above) as block courses are laid up. Frames may also be supplied with anchors welded in place.



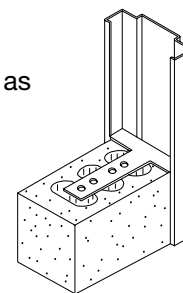
SPREADER

4. A second spreader is recommended at the mid point of the door opening to maintain the door opening dimension.

5. Continually check plumb and square as wall progresses.



Wire
Anchor



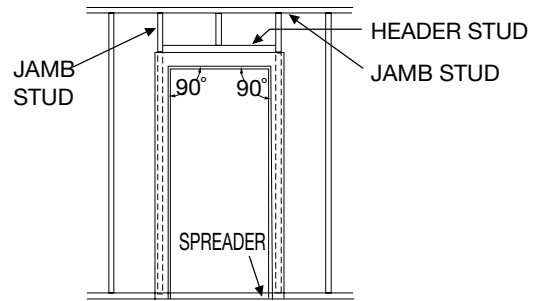
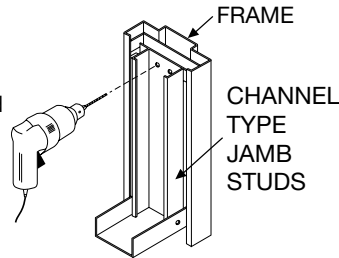
"T"
Anchor

STEEL STUD WALL CONSTRUCTION

ELEVATION

1. Assemble frame.
2. Install anchors. Position anchors in frame through the throat and tap in with a hammer. Frames may also be supplied with anchors welded in place.
3. Square, brace and plumb frame as shown.
4. Set spreader. Attach jambs to floor through floor anchor or floor extension. Install jamb studs to floor and ceiling runners and tightly against frame anchors.
5. Attach studs to frame anchors as shown.

NOTE: Drywall must extend at least 1/2" into frame at fire rated installations.

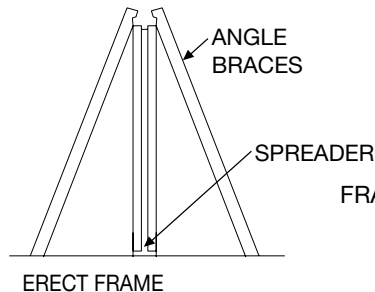


CHANNEL TYPE STEEL STUD

Position studs in frame throat and attach to anchors with screws or weld. If using screws, the installer should drill from the back side of the stud, through both the stud and anchor, then attach with (2) screws per anchor location.

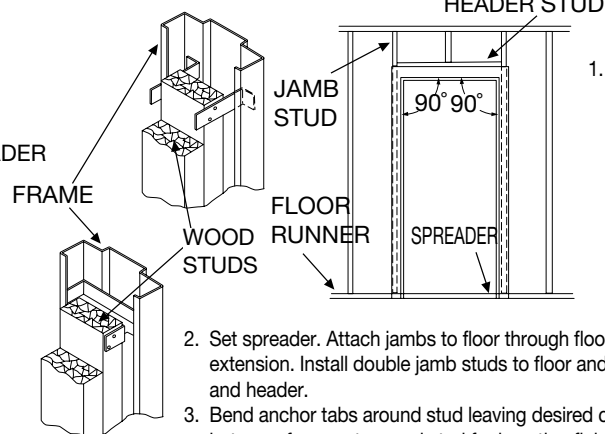
NOTE: When attaching header stud to jamb studs, be sure the stud is above frame header. This will assure ample room for attaching plaster lath or drywall and will not interfere with installation of hardware attached to frame header.

WOOD STUD CONSTRUCTION



Assemble frame. Stand frame up in desired location. Anchor one jamb to floor and set spreader on floor from anchored jamb to loose jamb. Position and anchor second jamb. Plumb, level and square frame, then brace.

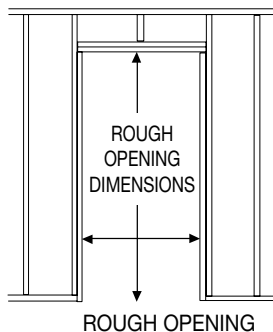
NOTE: Drywall must extend at least 1/2" into frame at fire rated installations.



1. Install anchors. Position anchors in frame throat and tap in with a hammer. Frames may also be supplied with anchors welded in place.

2. Set spreader. Attach jambs to floor through floor anchor or floor extension. Install double jamb studs to floor and ceiling runners and header.
3. Bend anchor tabs around stud leaving desired clearance between frame return and stud for inserting finished wall material.
4. Square and nail top anchor to stud on ONE JAMB ONLY. Check plumb and square and continue to nail balance of anchors to stud. Repeat for opposite jamb.

WOOD STUD CONSTRUCTION (STUDS ERECTED BEFORE FRAME)

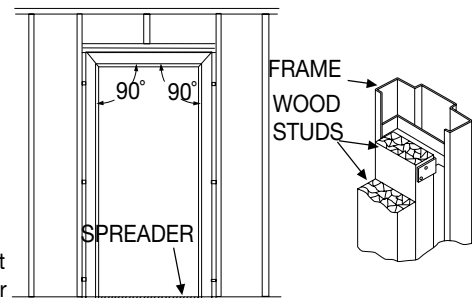


Build rough opening. Rough opening dimensions for 2" face frames should be 4-1/4" - 4-1/2" larger than door width and 2-1/4" - 2-1/2" larger than door height. It is recommended that double studs be used at jambs and headers.

NOTE: Drywall must extend at least 1/2" into frame at fire rated installations.

1. Assemble frame.
2. Install anchors. Position anchors in frame throat and tap in with a hammer. Frames may also be supplied with anchors welded in place. Base anchors may also be used. If base anchor cannot be used add one anchor per jamb at bottom.

3. Place frame in rough stud opening.
4. Bend anchor tabs around stud leaving desired clearance between frame return and stud for inserting finished wall material.
5. Set spreader and level frame. Shim jambs if necessary.
6. Square and nail top anchor to stud on ONE JAMB ONLY. Check plumb and square and continue to nail balance of anchors to stud. Repeat for opposite jamb.



PREPARATION OF HOLES FOR THREADED FASTENERS

PREPARATION OF HOLES FOR THREADED FASTENERS

The key to maximum strength in the installation of hardware using threaded fasteners is the proper sizing and depth of the tapped hole. Since screw sizes are normally specified and usually furnished by the hardware manufacturer, it is necessary to provide proper metal thickness and tapped hole size to make the installation as strong as intended.

A rule of thumb for most hardware installations, using standard coarse machine screw threads, is to provide a thread engagement of minimum 2 to 2 1/2 complete threads with approximately 75% engagement between each screw thread and its' mating thread.

Table I is a listing of several metal thicknesses and the corresponding number of threads engaged for various commonly used machine screw sizes.

TABLE I Number of Threads engaged per Screw Size vs. Metal Thickness				
METAL GAUGE	SCREW SIZE			
	8-32	10-24	12-24	1/4-20
20	1	7/8	7/8	3/4
18	1-1/2	1-1/5	1-1/5	1
16	2	1-1/2	1-1/2	1-1/2
14	2-1/2	2	2	2
12	3-1/3	2-1/2	2-1/2	2

Table II is a listing of tap drill sizes to provide proper percent thread engagement for the same range of sizes.

TABLE II Recommended Tap Drill Sizes for Machine Screw Threads		
SCREW SIZE	DRILL SIZE	HOLE DIA.
8-32	29	.136
10-24	25	.149
12-24	16	.177
1/4-20	7	.201

Table III lists the recommended pilot hole sizes for thread-cutting screws.

TABLE III Recommended Pilot Hole Sizes for Thread-Cutting Screws		
SCREW SIZE	DRILL SIZE	HOLE DIA.
8	27	.144
10	19	.166
12	11	.191
1/4	2	.221

FOR BEST RESULTS: READ AND FOLLOW THE HARDWARE MANUFACTURER'S INSTRUCTIONS FOR THE INSTALLATION OF EACH TYPE OF HARDWARE.

INCH/METRIC TAP AND DRILL SIZES AND DECIMAL EQUIVALENTS

Fraction	Drill Size	Decimal Equivalent (inches)	Metric Equivalent (mm)	Tap Size	Fraction	Drill Size	Decimal Equivalent (inches)	Metric Equivalent (mm)	Tap Size	Fraction	Drill Size	Decimal Equivalent (inches)	Metric Equivalent (mm)	Tap Size
1/64	80	0.0135	0.34		1/8	30	0.1250	3.18	“8-32,36”	21/64	O P	0.3160 0.3230 0.3281 0.3320 0.3390	8.03 8.20 8.33 8.43 8.61	3/8-24
	79	0.0145	0.37											
	78	0.0160	0.41											
	77	0.0180	0.46											
	76	0.0200	0.51			27	0.1440	3.66	10-24	11/32	S T	0.3438 0.3480 0.3580 0.3594 0.3680	8.73 8.84 9.09 9.13 9.35	7/16-14
	75	0.0210	0.53											
	74	0.0225	0.57											
	73	0.0240	0.61											
	72	0.0250	0.64											
1/32	71	0.0260	0.66		5/32	22	0.1563	3.97	10-32	3/8	V W	0.3750 0.3770 0.3860 0.3906 0.3970	9.53 9.58 9.80 9.92 10.08	7/16-20
	70	0.0280	0.71											
	69	0.0292	0.74											
	68	0.0310	0.79											
		0.0313	0.79											
	67	0.0320	0.81		11/64	18	0.1695	4.31	12-24	13/32	Y Z	0.4040 0.4063 0.4130 0.4219 0.4375	10.26 10.32 10.49 10.72 11.11	1/2-13
	66	0.0330	0.84											
	65	0.0350	0.89											
	64	0.0360	0.91											
	63	0.0370	0.94											
	62	0.0380	0.97		3/16	14	0.1820	4.62	12-28	29/64		0.4531 0.4688 0.4844 0.5000 0.5156	11.51 11.91 12.30 12.70 13.10	1/2-20 9/16-12 9/16-18
	61	0.0390	0.99											
	60	0.0400	1.02											
	59	0.0410	1.04											
	58	0.0420	1.07											
3/64	57	0.0430	1.09			10	0.1935	4.91	1/4-20	17/32		0.5313 0.5469 0.5625 0.5781 0.5938	13.49 13.89 14.29 14.68 15.08	5/8-11 5/8-18
	56	0.0465	1.18											
		0.0469	1.19											
	55	0.0520	1.32											
	54	0.0550	1.40											
1/16	53	0.0595	1.51	“1-64,72”		6	0.2040	5.18	1/4-28	39/64		0.6094 0.6250 0.6406 0.6563 0.6719	15.48 15.88 16.27 16.67 17.07	3/4-10
	52	0.0635	1.61											
	51	0.0670	1.70											
	50	0.0700	1.78											
			“2-56,64”											
5/64	49	0.0730	1.85			2	0.2210	5.61		11/16		0.6875 0.7031 0.7188 0.7344 0.7500	17.46 17.86 18.26 18.65 19.05	3/4-16
	48	0.0760	1.93											
		0.0781	1.98											
	47	0.0785	1.99											
	46	0.0810	2.06											
3/32	45	0.0820	2.08	3-56		C	0.2420	6.15	5/16-18	49/64		0.7656 0.7813 0.7969 0.81252 0.8281	19.45 19.84 20.24 20.64 21.03	7/8-9 7/8-14
	44	0.0860	2.18											
	43	0.0890	2.26											
	42	0.0935	2.37											
		0.0938	2.38											
	41	0.0960	2.44		17/64	H	0.2656	6.75	5/16-24	27/32		0.8438 0.8594 0.8750 0.8906 0.9063	21.43 21.83 22.23 22.62 23.02	1-8
	40	0.0980	2.49											
	39	0.0995	2.53											
	38	0.1015	2.58											
	37	0.1040	2.64											
7/64	36	0.1065	2.71	6-32	9/32	L	0.2813	7.14		59/64		0.9219 0.9375 0.9531 0.9688 0.9844	23.42 23.81 24.21 24.61 25.00	1-14
		0.1094	2.78											
	35	0.1100	2.79											
	34	0.1110	2.82											
	33	0.1130	2.87											
	32	0.1160	2.95		5/16		0.3125	7.94	3/8-16	1		1.0000	25.40	
	31	0.1200	3.05											

DOOR INSTALLATION

INSTALLATION STEPS

- | | |
|------------|---|
| STEP ONE | Attach the hinges loosely to the door with the heads of the pivot pins toward the top. |
| STEP TWO | Support the door adjacent to the hinge jamb in a position 90° to the frame. A wood block close in thickness to the undercut of the door makes a good support. |
| STEP THREE | Align the hinges with the reinforcing on the jamb and insert the mounting screws beginning with the top hinge. |
| STEP FOUR | Tighten all screws in all hinges and close door to check clearances between door and frame. |

If frame is square and plumb the clearances should be approximately 1/8" at the top, 3/32" at hinge and lock edges and 5/8" undercut at the floor.

CLEARANCE ADJUSTMENTS

If clearances at lock and hinge jambs need adjustment, remove screws (one leaf at a time) and insert narrow shims (3/8" wide by length equal to hinge height) as needed, to shift the door by small increments in desired direction. See Figure 1 and 2.

FIGURE 1

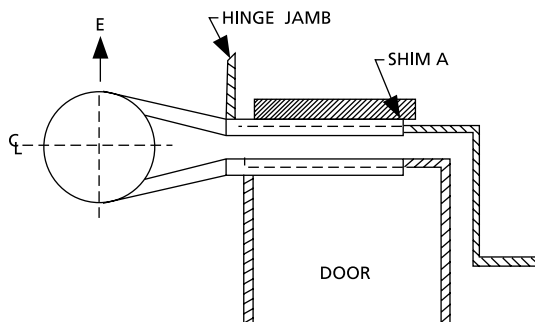


FIGURE 1

Using shim (A) only, will move both door and centerline of hinge barrel in direction of Arrow "E".

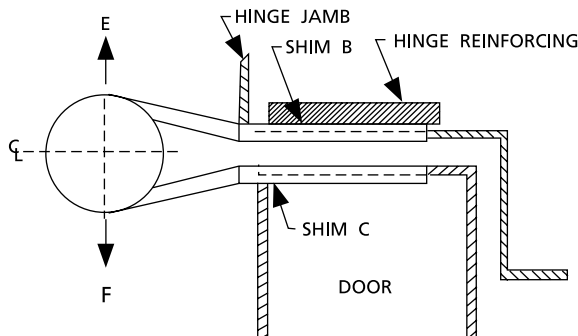
FIGURE 2

Using shim (B) only, both door and centerline of hinge barrel will move in the direction of Arrow "F".

Using shim (C) only, door will be relocated in direction of Arrow "F".

Using both shims (B) and (C) will relocate the door in direction of Arrow "F" by a greater amount than by using either (B) or (C) alone.

FIGURE 2



DOOR INSTALLATION

SHIM INFORMATION

Various materials can be used for shims, from door packaging strapping to stock shim material. The more dense the shim material is (least compressible) the better, so as to decrease the possibility for screws loosening as the shim takes "set". The size should be 3/8" wide and 4-1/2" long for a 4-1/2" hinge or 5" long for a 5" hinge, etc. Following are some typical clearance problems and hinge shimming methods which can be used to improve the situation. See page 3 for shim installation instructions.

FIGURE 1

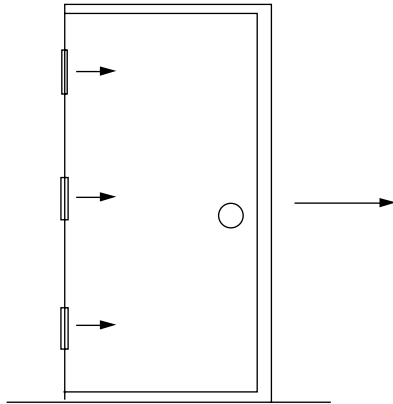


FIGURE 1
TIGHT HINGE SIDE CLEARANCE AND/OR
EXCESSIVE LOCK SIDE CLEARANCE

Even but excessive clearance between the strike jamb and the lock edge of the door can be improved by placing equal sized shims (B) between each jamb hinge reinforcing and the hinge leaf to move the door and hinge barrel toward the strike jamb. Further adjustments can be made by placing equal sized shims (C) behind each door hinge reinforcing.

FIGURE 2

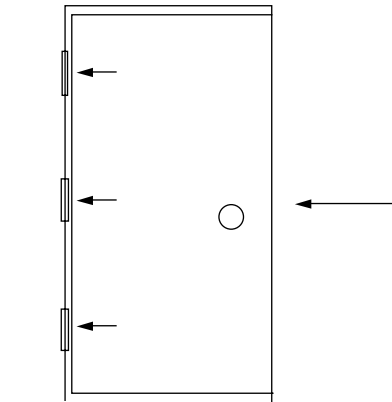


FIGURE 2
TIGHT LOCK SIDE CLEARANCE AND/OR
EXCESSIVE HINGE SIDE CLEARANCE

Even but tight clearance between the strike jamb and the lock edge of the door can be improved by placing equal sized shims (A) between each jamb hinge reinforcing and the hinge leaf to move the door and hinge barrel toward the hinge jamb. Further adjustments can be made by placing two equal sized shims (A) behind each door hinge reinforcing.

NOTE: Shim (A) when too thick can cause hinge bind when the door is closed, especially when weatherstrip is applied to the hinge rabbet.

DOOR INSTALLATION

FIGURE 3

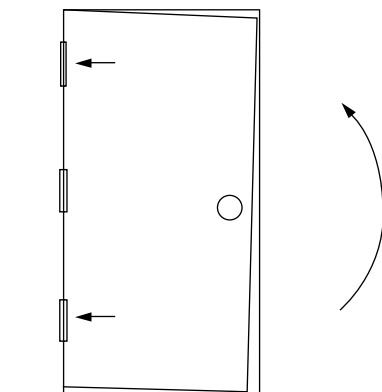


FIGURE 3
OUT OF SQUARE HINGE JAMB OR
STRIKE JAMB

Toe Out:

Frame openings which are wider at the base than at the head will cause wider clearance at the lower lock edge and at the top as shown in Figure 3. This condition can be improved by placing shims (B) and/or (C) between the jamb and door hinge reinforcements respectively at the bottom hinge leaves.

Further adjustment can be made by placing shim (A) behind the top hinge which will in effect rotate the door about the middle hinge. If the strike jamb is toed out, try placing shims (B) and (C) at the middle hinge as well.

FIGURE 4

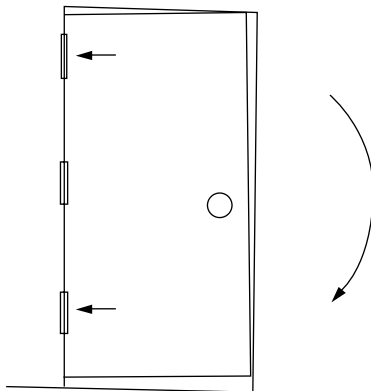


FIGURE 4
OUT OF SQUARE HINGE JAMB OR
STRIKE JAMB

Toe In:

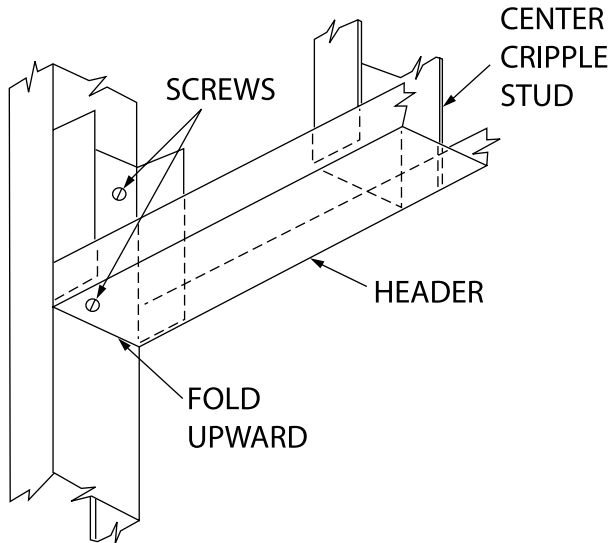
Frame openings which are narrower at the base than at the head will cause tight clearance at the lower lock edge and at the top as shown in Figure 4.

This can be improved by placing shim (A) behind the bottom hinge and possibly the middle hinge as well.

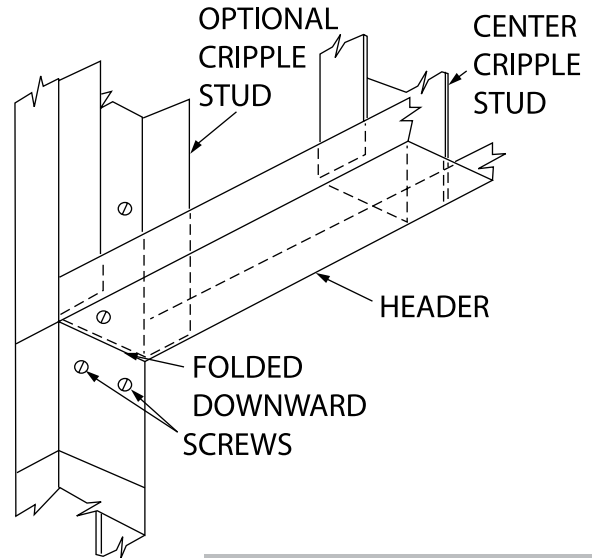
Further fine adjustment can be made by placing thin shims (B) and (C) at the top hinge.

FRAME INSTALLATION

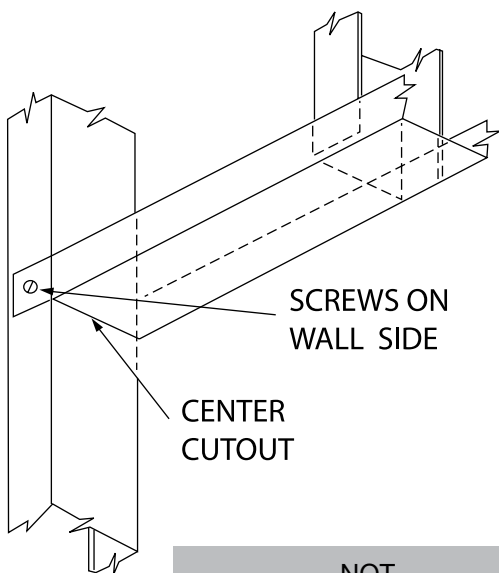
FRAME INSTALLATION INSTRUCTIONS FOR STEEL AND WOOD STUD WALL CONSTRUCTION



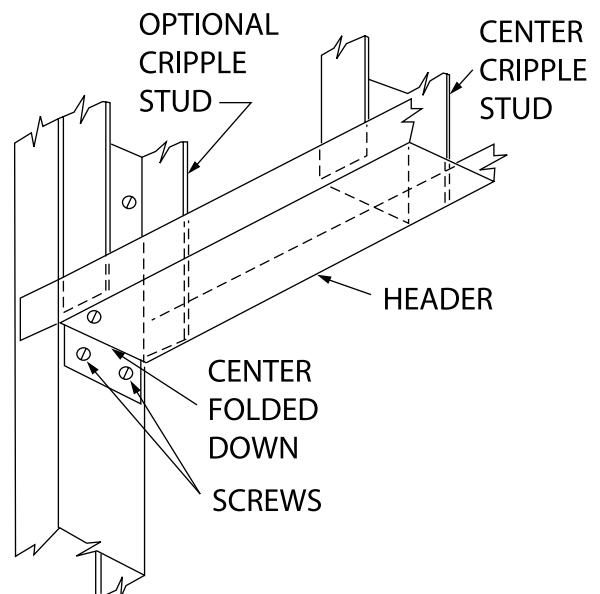
RECOMMENDED



ACCEPTABLE



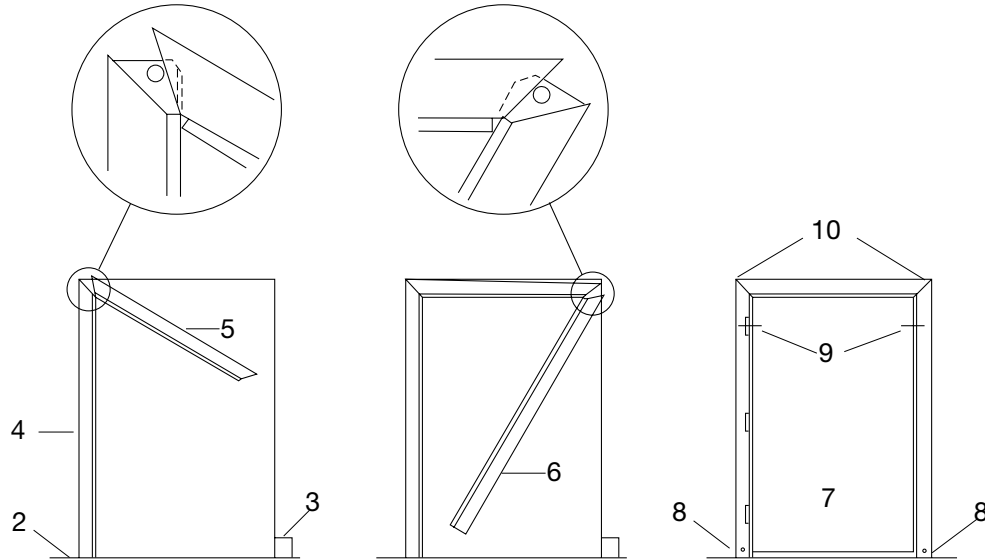
NOT
RECOMMENDED



ACCEPTABLE

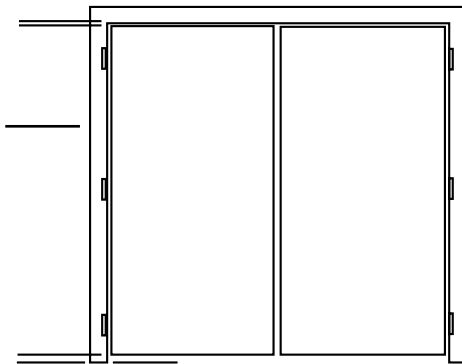
FRAME INSTALLATION

FRAME INSTALLATION INSTRUCTIONS FOR STEEL AND WOOD STUD WALL CONSTRUCTION



1. Construct wall with rough opening height equal to finished opening height plus 3/4" to 1" maximum rough opening width is as follows:
 - a) For 2" face frames-opening width plus 2-1/8" to 2-3/8".
 - b) For 1-3/4" and 1-1/2" face frames-opening width plus 1-7/8" to 2". It is critical that 1-1/2" face frames be held within this range; they allow no room for tolerance.
 - c) For "G" and "CG" profiles, 3" jamb depth 1-9/16" rabbet and 3", 3-1/8", 3-1/4" and 3-3/8" jamb depth 1-15/16" rabbet frames-opening width plus 2-13/16", all other "G" and "CG" profile frame-opening width plus 2-1/8" to 2-3/8".
2. Bottom of frame must set on a solid surface.
3. If wrap-around base anchor is used, notch drywall in that area.
4. Retract compression bars in the jambs and install one jamb in position on wall.
5. Insert frame head under the corner clips of the jamb and raise into position.
6. Insert the corner clips of the remaining jamb into the opposite end of the head and position jamb on wall.
7. Locate a removable frame spacing bar at base of centered frame to maintain proper opening width during installation.
8. Square and plumb frame and install base anchor screws through countersink holes in frame face and into floor plate.
9. Level, square, and plumb top of frame and tighten compression bars.
NOTE: Do not over tighten!!
10. Install (4) No. 8 x 1/2 sheet metal screws at the corners of the head to attach head to jambs. NOTE: Required for fire rated frames.

TROUBLESHOOTING CHECKLIST



DOORS

✓ CLEARANCES

Top _____
Bottom _____
Hinge Edge _____
NOTE: Measure entire edge
Lock Edge _____
NOTE: Measure entire edge

✓ DOOR PANEL FLATNESS

Hinge Edge _____
Lock Edge _____

✓ DOOR PANEL SIZE

Height _____
Width _____
Square _____
NOTE: Measure diagonally

✓ DOOR PLANE

Pairs only _____
NOTE: Door closed, edges meet flush

FRAMES

✓ DIMENSIONS

Opening Width _____
Opening Height _____
Hardware Locations _____
LOCK _____
STRIKE _____
HINGES _____
BACKSET—STRIKE _____

✓ SQUARE

NOTE: Measure diagonally

✓ PLUMB OF JAMB

Active _____
Inactive _____

✓ JAMB TWIST

RECOMMENDATIONS FOR CORRECTION

TROUBLESHOOTING - DOOR AND FRAME INSTALLATION

Systematically Analyze

The most frequent cause of poor door and frame fitting is improperly assembled or inadequately installed frames. Since most complaints received are not explicit as to the actual cause of the problem, but rather the results of the problem, it becomes necessary to analyze the situations systematically to determine the best course of action.

Basic Equipment List

Proper inspection of an installation requires the use of certain tools which will facilitate consistent accurate measurement for best results. The following list includes the minimum basic equipment which will be needed:

1. Steel Tape: Measure doors and frame openings and diagonals as a double check for squareness.
2. Framing Square: Determine squareness of frame and double check for jamb twist.
3. Solid Steel Rule: 4 ft. — Check for jamb twist in single door frames.
4. 6 ft. Masonry Level: Determine level of head, plumb of jambs and to check for bow in doors.
5. Plumb Bob and Line: Double check plumb of jambs.

Experience with trouble shooting and correcting door/frame installation problems will undoubtedly lead to other methods and devices to help make the job easier.

Too Tight a Fit

Regardless of the type of complaint, it will be advantageous to obtain all the data possible that can reveal any indication of improper installation or distorted door or frame parts. In the case of drywall frames make sure the frame fits the wall section without spreading the throat or without undue clearance. Too tight a fit can cause distortion and dislocation of the rabbets which in turn can decrease available door to frame clearances on the lock edge. Also this will cause poor fitting miter joints in knockdown or KD frames.

Masonry Alignment

Masonry frames are normally installed and anchored to the concrete floor before the wall is built. They are then anchored to the wall between courses and often filled with mortar. It is obvious that initial alignment of a masonry frame is critical and that sufficient support must be given to prevent distortion due to the accumulated weight of wet mortar. If a spacer is not placed in the opening between the jambs at the mid-point, as well as at the floor during this process there will likely be a degree of bow and possibly twist in the jambs. This will, in the very least, decrease available door to frame clearance.

TROUBLESHOOTING - DOOR AND FRAME INSTALLATION

SINGLE DOOR FRAMES	PAIR OF DOORS/FRAMES	REMARKS																						
1. With doors closed, <u>measure</u> clearances at head and both jambs. <table><tr><td>Head</td><td>1/8"</td></tr><tr><td>Jamb</td><td>3/32"</td></tr><tr><td>Undercut (1-3/4" Door)</td><td>5/8"</td></tr><tr><td>Undercut (1-3/8" Door)</td><td>3/4"</td></tr></table>	Head	1/8"	Jamb	3/32"	Undercut (1-3/4" Door)	5/8"	Undercut (1-3/8" Door)	3/4"	With doors closed, <u>measure</u> clearances at head, both jambs and between doors. <table><tr><td>Head</td><td>1/8"</td></tr><tr><td>Jamb</td><td>3/32"</td></tr><tr><td>Center</td><td>3/16"</td></tr><tr><td>(1/8" with "Z" astragal)</td><td></td></tr><tr><td>Intermediate Mullion</td><td>3/32"</td></tr><tr><td>Undercut (1-3/4" Door)</td><td>5/8"</td></tr><tr><td>Undercut (1-3/8" Door)</td><td>3/4"</td></tr></table>	Head	1/8"	Jamb	3/32"	Center	3/16"	(1/8" with "Z" astragal)		Intermediate Mullion	3/32"	Undercut (1-3/4" Door)	5/8"	Undercut (1-3/8" Door)	3/4"	Inconsistent clearances on a given side indicate likely out of square frames or twisted jambs or improperly seated hinges or reinforcing.
Head	1/8"																							
Jamb	3/32"																							
Undercut (1-3/4" Door)	5/8"																							
Undercut (1-3/8" Door)	3/4"																							
Head	1/8"																							
Jamb	3/32"																							
Center	3/16"																							
(1/8" with "Z" astragal)																								
Intermediate Mullion	3/32"																							
Undercut (1-3/4" Door)	5/8"																							
Undercut (1-3/8" Door)	3/4"																							
2. With door closed, <u>observe</u> whether door rest flush on stops of jamb and head.		Incomplete contact with stop for single doors or uneven meeting edges for pairs of doors indicate out of plumb or twisted jambs or both.																						
3. With door ajar, <u>observe</u> whether door will remain stationary or swing open or close involuntarily.	With doors closed, <u>observe</u> whether they are flush with each other at meeting edges or with stops of intermediate mullion.	Involuntary movement of doors indicate out of plumb or twisted jambs or both. Out of square jambs and heads will cause inconsistent clearances or interference between door and jamb or head or between meeting edges of pairs of doors.																						
4. With door open, <u>place</u> framing square in corner against jamb and head rabbets to determine squareness of both jambs with head. <u>Measure</u> opening width at head and at floor.	With doors ajar, <u>observe</u> whether they will remain stationary or swing open or close involuntarily.																							
	With doors open, <u>place</u> framing square in corner against jamb and head rabbets to determine squareness of both jambs and intermediate mullion (if used) with head. <u>Measure</u> opening width at head and floor.	If diagonal measurements are identical the frame opening is square. This procedure can confirm indications observed per Step 4.																						
5. <u>Measure</u> with steel tape diagonally from corner to corner of opening in both directions and on both sides of frame.	<u>Measure</u> with steel tape diagonally from corner to corner of opening in both direction and on both sides of frame. On frames with intermediate mullions do this for both door openings plus over the full frame opening.	Evaluation of plumb should be done in conjunction with evaluation for twist because the latter can affect the plumb indication, depending upon the degree of twist. Both jambs should give precisely identical readings on a level bubble. If there is any question, confirm the reading using a plumb bob.																						
6. <u>Determine</u> plumb of both jambs using the 6 ft. level vertically on the jamb faces or by suspending a plumb bob on a line against the head face and adjacent to each jamb.	<u>Determine</u> plumb of both jambs and intermediate mullion (if applicable) using the 6 ft. level vertically on the jamb or mullion faces or by suspending a plumb bob on a line against the head face and adjacent to each jamb or mullion.																							
7. <u>Check</u> for jamb twist by laying the framing square flat on the floor against the rabbet or face and mark a line on the floor toward the opposite jamb. <u>Repeat</u> for both jambs.	<u>Check</u> for jamb twist by laying the framing square flat on floor against the rabbet or face and mark a line on the floor toward the opposite jamb. <u>Repeat</u> for both jambs and both sides of the intermediate mullion if applicable.	The extended lines should meet as one straight line if both jambs are in plumb and without twist or they should be parallel if there is no twist but some out of plumb.																						
NOTE: A 4 ft. steel ruler simultaneously placed against the faces of opposite jambs will verify results.																								

TROUBLESHOOTING - DOOR AND FRAME INSTALLATION

CHECKING DOORS SUSPECTED OF BEING TWISTED OR BOWED

Single doors which do not fit flush against the stop of the strike jamb or pairs of doors which are not flush at the meeting edges could contain twist or bow. This can be determined with the door in its hung position by placing a 6 ft. level vertically against the face of the door adjacent to the lock edge. Any bow or twist in the door will be evident if the level will not lie flat against the door over its entire length. It is important that a minimum 6 ft. level be used to adequately indicate bow or twist.

If no deformation of the door is indicated, check the plumb of the lock edge with the door in its closed position. If it will not latch, hold it without forcing it against the frame stop. Compare the plumb of the door with the plumb of the hinge and strike jambs for single doors, or with both hinge jambs for pairs of doors. If the plumb of the door edge is identical with the hinge jamb, even though they may not be vertical, this would confirm that no twist or bow exists. Further, if the hinge and/or strike jamb are out of plumb this would confirm the cause of the door not fitting properly.

Methods to correct door and frame fitting problems are on previous pages.

CORRECTING DOOR AND FRAME FITTING PROBLEMS

CLEARANCES

KD drywall frames can usually be corrected for minor distortions or misalignment by releasing compression anchors or detaching stud anchors and readjusting. Masonry frames which have been grouted or filled with mortar are virtually impossible to correct. If distortions or mis-alignments are minor enough, clearances can be balanced somewhat by shimming the appropriate hinges. See instructions for clearance adjustments.

FIGURE 1

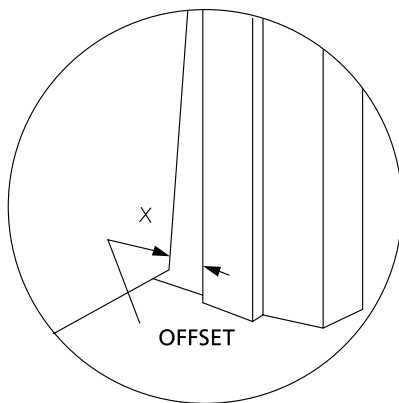


FIGURE 2

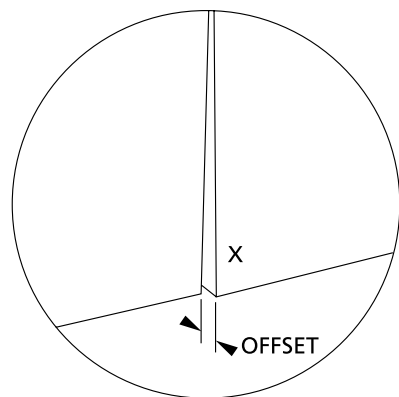


FIGURE 3

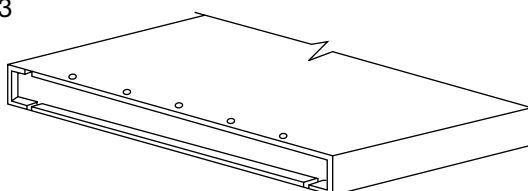


FIGURE 1 & 2
DOOR MODIFICATION TO CORRECT
OUT-OF-PLUMB JAMBS

Single doors which do not lie flat against the frame stops, or pairs of doors which do not fit flush with each other at the meeting edges due to jambs being out of plumb can be modified by creating a twist to conform to the error in the frame.

1. Measure the distance that the inside corner of the door is offset from the stop, or in the case of pairs of doors, the distance that the door in question is offset from the other at the corner of the meeting edge.
2. Drill out the spot welds attaching the end channel on the outside (side away from the frame) on the end which is offset from the frame stop of from the meeting edge of the opposite door of a pair.

FIGURE 3
DO NOT DRILL THROUGH THE FLANGE
OF THE END CHANNEL
Make sure all welds are released.

CORRECTING DOOR AND FRAME FITTING PROBLEMS

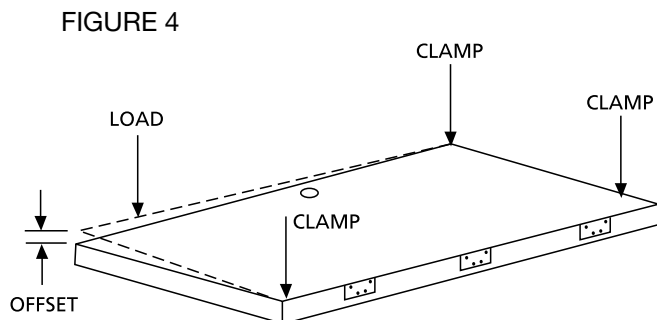


FIGURE 4
DOOR MODIFICATION TO CORRECT
OUT-OF-PLUMB JAMBS (CONTINUED)

3. Lay the door flat, outside up on supports at the three other corners and clamp them in position. Force the remaining corner down a little more than the amount of offset measured and clamp the released end channel flange to the face skin using several #7R vise grip clamps.

Remove the load and determine if sufficient twist is retained. Re-load and re-clamp as necessary to get the proper offset.

4. When the proper offset is achieved plug weld through the drilled holes to secure the end channel flange to the face skin. Grind the weld, fill, finish smooth and re-paint as necessary.

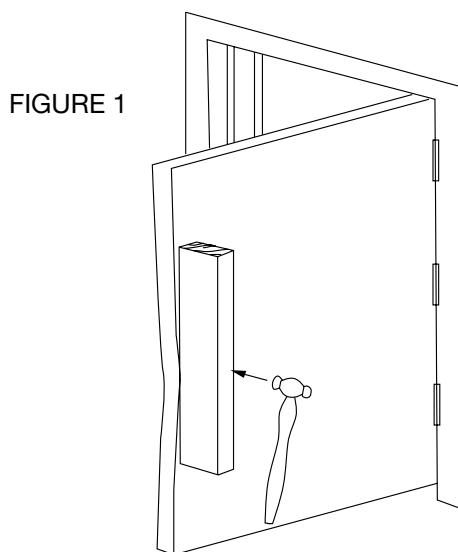


FIGURE 1
STRAIGHTENING OF BOWED OR
TWISTED DOORS (Distorted Lock Rail)

1. With the door in its hung position, determine the center of bow or location of lock rail distortion. Place a minimum 2 ft. long 2 x 4 block of wood on edge adjacent to the lock rail edge centered over the center of the deformation.
2. Strike the center of the block sharply with a hammer re-checking flatness with 6 ft. level after each blow.

NOTE: For best results, remove lockset and latch bolt.

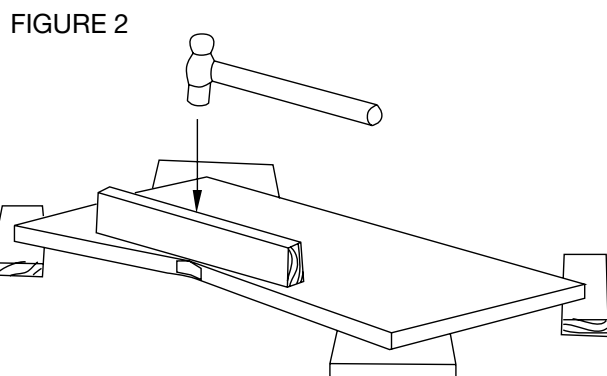


FIGURE 2

3. If the preceding method does not correct the problem, remove the door and lay it flat on 2 x 4 wood supports at the corners as shown in Figure 2, and repeat Figure 1/Step 2 as stated above.

NOTE: Use caution when straightening doors with large edge cut-outs (example: mortise lock cut-outs) to prevent permanent deformation of the door face skin in that area.

MISCELLANEOUS

Packaging and Product Labeling	88
Door Identification Label	89
Frame Identification Label	91

PACKAGING AND PRODUCT LABELING

Doors and frames are packaged and shipped to minimize damage in transit. Packaging depends on how materials are ordered. Your sales manager or customer service representative can help you with coordinating orders for best packaging and shipping results.

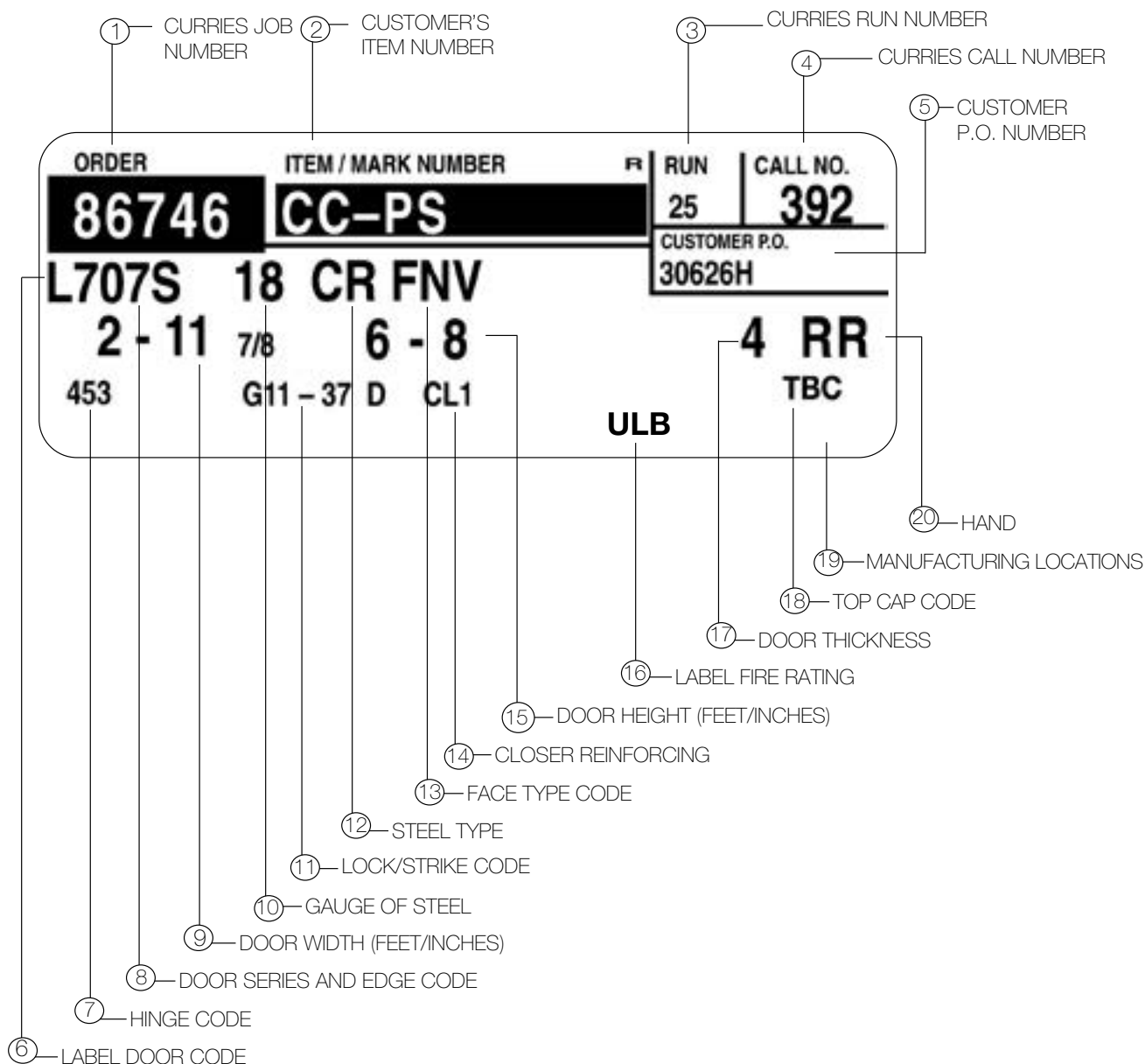
All products are identified with a label tag. A brief description of a door and frame tag follows on the next pages.

DOORS IDENTIFICATION LABEL

Following is a description of the various codes found on a door identification label. Important codes are enclosed in boxes. See door code chart for further details.

Numerical Position	Name	Description
①	CURRIES Job Number	Number assigned for Curries Identification.
②	Customer's Item Number	Customer's Item Number for a given part description.
③	CURRIES Run Number	Number assigned for Production Control purpose.
④	CURRIES Call Number	Number assigned for Production Control purpose.
⑤	Customer P.O. Number	CURRIES Distributor P.O. Number
⑥	Label Code	Identifies whether or not door is listed for fire.
⑦	Hinge Code	Identifies size, type and quantity of hinges.
⑧	Series & Edge Code	Identifies door series and type of edge finish.
⑨	Door Width	Specifies nominal opening width (Feet/Inches).
⑩	Gauge of Steel	Identifies gauge thickness of face skin steel.
⑪	Lock/Strike Code	Identifies type(s) of lock(s) or strike preparation.
⑫	Steel Type	Specifies type of steel used for face skins.
⑬	Face Type Code	Describes face and glass lite, if applicable.
⑭	Closer Reinforcing	Identifies closer reinforcing, if applicable.
⑮	Door Height	Specifies nominal opening height (Feet/Inches).
⑯	Label Fire Rating	Identifies U.L. or W.H.I. fire rating, if applicable.
⑰	Door Thickness	Identifies door thickness.
⑱	Top Cap Code	Specifies caps and type.
⑲	Manufacturing Location	Indicates hardware locations other than Curries.
⑳	Hand	Identifies swing direction of door.

DOOR IDENTIFICATION LABEL - SAMPLE



See [Code Charts](#) for specific definition of all codes.

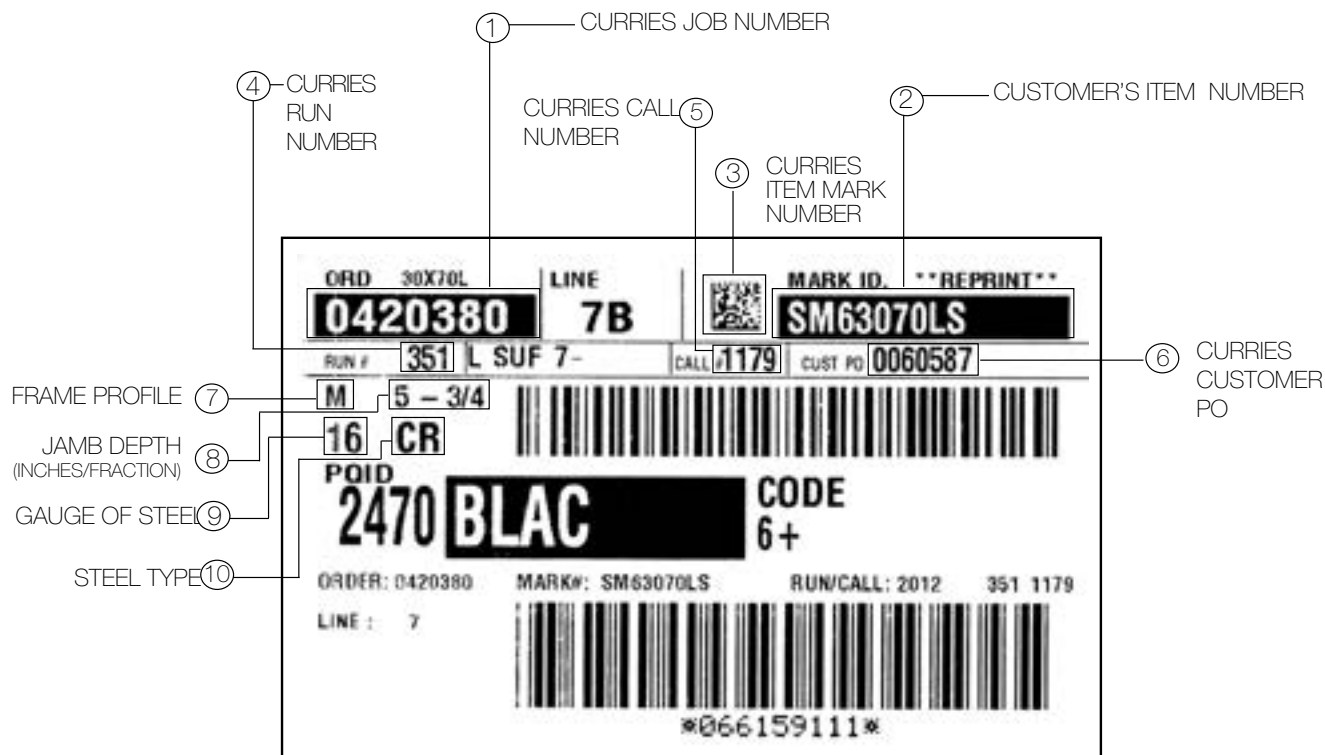
FRAME IDENTIFICATION LABEL

Following is a description of the various codes found on a frame identification label.

See frame code chart for further details.

Numerical Position	Name	Description
①	CURRIES Job Number	Number assigned for Curries Identification
②	Customer's Item Mark Number	Customer's Item Mark Number
③	Customer's Item Mark Number	QR Code for Mark Number
④	CURRIES Run Number	Number assigned for Production Control purpose
⑤	CURRIES Call Number	Number assigned for Production Control purpose
⑥	Customer P.O.	CURRIES Distributor P.O. Number
⑦	Frame Profile	Identifies profile as M-Masonry, C-Drywall, etc.
⑧	Jamb Depth	Identifies jamb depth of frame
⑨	Gauge of Steel	Identifies steel thickness by gauge
⑩	Steel Type	Specifies CR-cold rolled, R-galvanized, etc.

FRAME IDENTIFICATION LABEL - SAMPLE



See [Code Charts](#) for specific definition of all codes.