

**Identification and Installation of Hollow Metal Doors and Frames**

**Door and Frame Identification**

1. Obtain a copy of Rocky Mountain Metals, Inc (RMMI) shop drawings furnished to the General Contractor on your job.
2. The shop drawings contain a list of the architectural numbers (marks) assigned to each door and frame and a corresponding number for each door and frame assigned by RMMI.
3. Each frame has a RMMI number stamped on the inside of the frame just above the middle hinge plate. Each door has a RMMI number stamped on the middle hinge plate. The number stamped on the top hinge plate of the door is a RMMI number.
4. By checking the number stamped on the door or frame in shop drawings, the corresponding architectural number (mark) may be identified and checked on the architect’s plans to fine where to install the door or frame in the building.

**Installation of Doors and Frames**

The proper performance of most manufactured building products depends not only on how they are made, but how they are put in place. This is particularly true of hollow metal doors and frames. Any one acquainted with building construction knows that the installation of doors and frames is an operation demanding care and skill, if the doors are to operate properly. Care in manufacturing does not, in itself, guarantee satisfactory performance. Even the best designed and most carefully made frames and doors, if improperly, will not function properly. The contractual obligations of RMMI do not include the installation of the products in the building, but only their delivery, in good condition and when needed, at the building site. Installation work is to be done by the General Contractor.

For obvious reasons, however, RMMI is greatly concerned that our work is properly handled and protected after delivery, and that the necessary care and skills are exercised in the setting of frames and hanging of doors. Frames out of true alignment and doors not operating properly are deficiencies that cannot be tolerated. It is important to all concerned, therefore, that attention be given to the essential requirements of good practice in field installation work.

**Delivery and Receiving of Material**

Hollow metal work is fabricated in accordance with the shop drawings approved by the architect or engineer. Preparations for hardware or other items to be supplied by other is provided in accordance with the information furnished to RMMI by the hardware supplier or by those other suppliers or trades with whom we are required to coordinate work.

Should any material be damaged in shipment, claims should immediately be filed by the General Contractor, who should notify RMMI by telephone or in writing, requesting inspection of the damaged material. If shipped by common carrier, the General Contractor should contact the delivery carrier’s regional office requesting inspection of the damaged material. We will furnish copies of shipping papers to help expedite the claim.

If a claim is to be made for any error or deficiency in the hollow metal work itself, it is imperative that RMMI be called and then notified in writing before initiating any corrective work in the field. We have our own field representatives who are qualified to do expert repair work. Frames and doors should be inspected immediately upon arrival for damage. Claims filed seven days or more after arrival will not be accepted.

**On Site Storage**

Improper storage of hollow metal work at the construction site often results in deterioration of the primer coat of paint or in damage to the product itself.

The following procedures should always be observed in storing hollow metal doors and frames at the job site:

1. Store all materials in a dry area, preferably under cover;
2. Place all material on planking or blocking, at least 4” off of ground, 2” off of a paved area or floor slab;
3. Do not stack material flat, store doors and frames in a upright position with heads uppermost;
4. Place no more than 5 single-opening frames or 3 multi-opening frames in a group and no more than 5 doors in a group;
5. Provide, by means of wood strips, a space of at least ¼” between all units, to permit air circulation between them;
6. Do not permit cardboard or paper containers or wrappings to become wet. If this should occur, remove them immediately;
7. Items stored outside should be covered with plywood sheets. Water damage to primer (white splotches and peeling) will be the General Contractor’s responsibility.

**Installation of Pre-set Welded Frames**

Three sided welded door frames are checked at the factory to insure that they are square and that no jamb twists have occurred during their fabrication. Spreader bars are then attached to the jamb base to minimize misalignment or other damage during shipment, and the frames are loaded on the delivery truck by personnel experienced in frame packing. In spite of these precautions, however, the frames can, and sometimes do, arrive at the job site with minor alignment deviations.

Most minor deviations from true from and alignment can readily be corrected during installation if the General Contractor will see that the following procedures are followed:

1. Use some type of triangular supporting and bracing device that will securely hold the frame in the exact location and alignment required. Usually such bracing is made of wood, as shown in Figure 1. However, metal “jacks” or supporters, designed specifically for this purpose are commercially available, and their use is recommended.

Insert figure 1

1. Use temporary wood spreaders, not less than ¾” thick and cut to accurate dimension, at mid-height and sill (see Figure 2), removing the steel spreader at the floor. This spreader is for shipping purposes only.

Insert figure 2

1. Check the frame for squareness and alignment ( Figure 3), then secure floor anchors to the floor slab. Frames are not guaranteed for squareness.

Figure 3

1. It is the General Contractor’s responsibility to check all frames with approved shop drawings and hardware schedules, before installation.
2. Protecting the frame from accidental abuse, build walls to the frame, making sure that its proper alignment is maintained.
3. After frame is permanently built into the wall, with all anchors properly installed, remove the wood spreaders.

**Jamb Anchors**

As shown in Figure 4, a variety of jamb wall anchors is available for the various types of wall construction:

Figure 4

1. **Masonry Anchors**

The perforated or corrugated strap Type A and/or B is often used on custom frames. This type of anchor can be used in either masonry for masonry coursing as well as access for full grouting of jambs. The T-strap anchor (Type A) provided total adjustability, and is made to fit a particular type of frame profile. Care must be taken by the masonry contractor to install the proper number of anchors and to space them properly. The number of anchors used on each jamb must be as follows:

For openings up to 7’6” in height – 3 anchors opposite hinges;

For openings 7’6” to 10’ in height – 4 anchors;

For openings over 10’ in height – I anchor for each 2’ of height or fraction.

1. **Steel Stud Anchors**

The channel stud anchpor, (Type D) and (Type H) when spot welded to the back of the jamb, meets the UL requirements for labeled frames. Fasten channel stud to anchor with minimum of two screws per anchor.

1. **Wood Stud Anchors**

The type of wood stud anchor shown (Type E) is spot welded to the back of the jamb. Fasten anchor to wood stud with minimum of two nails per anchor.

**Floor Anchors**

The standard floor anchor is spot welded to the foot of the frame and, if firmly secured to the floor by proper fasteners, provides solid anchorage for the base of each jamb. However, as it does not provide for adjustability, shimming must be used if the floor is not level. The adjustable floor anchor is designed for use where there are significant irregularities from level, or an intended slope in the floor.

**Backpainting and Grouting of Frames**

When the frames are to be fully grouted, or when temperature conditions necessitate the use of anti freezing agents in plaster or mortar, the inside of the frames must be coated with a bituminous water resistant paint by the contractor responsible for installation. Gypsum plaster in particular can cause substantial rust damage.

Muriatic acid will damage primer and void any warranty.

**Rubber Silencers**

Proper hardware preparations in the door and frame assume a 1/16” space between the door face and the frame stop. This clearance must be filled with either a silencer or with weatherstripping designed to fill the space. To insure that these items are clean and undamaged when installation is complete, they are usually installed after the field painting is done, either by adhesion or by insertion into holes provided in the frame. When frames are built into masonry construction, such holes must either be protected, to prevent their being filled with group, or they may have to be reamed out later.

**Installation Tolerances**

The maximum tolerances that should be permitted in respect to squareness, plumbness, alignment and twist of the installed frame are shown in Figure 5.

Figure 5

**Installation of Welded Frames in Prepared Openings**

Masonry openings that are to receive preassembled welded frames must be accurately constructed. They should be 1/2'’ wider than the overall frame width and ¼” higher than the overall frame height above the finished floor, to provide a ¼” clearance on all sides, and the jambs must be plumb within a maximum tolerance of 1/8”. Shim behind anchor back strap to maintain these clearances. **Do not** deform frame when tightening bolts.

**Anchorage**

As shown in Figure 6, (Type and Anchor) the frame may be anchored directly to the masonry by several methods, using flat head machine screws into expansion shields, or it may be attached to a pre-set rough buck anchored to the masonry in the same way. In either case, three anchors (four on UL labeled frames) should be used on each jamb for doors up to and including 7’6” in height, four on each jamb for taller frames. Bolts and shields **are not** furnished by RMMI.

Figure 6

**Hanging of Doors**

It is the responsibility of the installer to hang all doors and install all hardware. RMMI does not furnish any hardware items. Holes for the mounting or template hardware are drilled and tapped at the factory. This is not true, however, of preparations for surface mounted items. The drilling and tapping of holes for mounting such items are the responsibility of the installer. No holes ½” or less in diameter are drilled by RMMI.

Experienced craftsmanship and care are essential in the hanging of metal doors. The use of hinge shims, as illustrated in Figure 7 is sometimes a requirement, to provide uniform clearance around the door and alleviate “hinge bind”, especially if a frame has been racked during the handling or installation.

The door to frame clearance adjustment toward the strike jamb (in the direction of arrow S) can be accomplished by placing a shim or the shims under the hinge leaf or leaves along the barrel edge of the hinge. Adjustment toward the hinge jamb (in the direction of the arrow H) can be done by placing a shim or shims under the outer edge of the hinge leaf or leaves.

The following edge clearances are recommended by RMMI.

At jamb and head; 1/8” between door and frame.

At sill where no threshold is used” ¾” maximum between door bottom and finished floor unless otherwise required by carpet thickness.

At sill having a threshold: ¼” maximum between door bottom and threshold, unless otherwise required by special door bottom detail. Between meeting stiles of pairs of doors: 1/8”

Figure 7