

GUIDE SPECIFICATION FOR RECEIPT, STORAGE AND INSTALLATION OF HOLLOW METAL DOORS AND FRAMES

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Hollow Metal Manufacturers Association

Division of the National Association of Architectural Metal Manufacturers

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PART 1 - GENERAL

1.01 INTRODUCTION

The purpose of this guide specification is to describe the essential requirements for the receipt, storage, handling and installation of hollow metal door and frame products. Proper installation of the product is as important as the quality of the manufacturing.

The installation of doors and frames is a trade demanding care and skill if the assembly is to operate and perform properly. Care in manufacturing does not, in itself, guarantee satisfactory performance. Even the best designed and most carefully constructed doors and frames will not function properly if installed incorrectly.

The hollow metal manufacturer is a material supplier, not a subcontractor. The manufacturer does not provide for the installation of their product in the building, but only shipment in good condition from the factory.

It is essential that material is properly stored prior to installation and good installation skills are exercised in the setting of frames and hanging of doors. Should a problem occur most member companies of the Hollow Metal Manufacturer's Association Division of NAAMM have their own field representatives who are qualified not only to do expert repair work but to determine whether the fault lies with the manufacturer or with some other party.

1.02 RELATED DOCUMENTS

The documents listed are referenced by basic designation only. The edition of a document is deemed to be that in effect on the publication date of this document, unless noted otherwise. If a more recent document is available the specifier should verify its applicability to this standard prior to inclusion.

- A. ANSI/SDI A.250.11 Recommended Erection Instructions for Steel Frames
- B. ANSI/NAAMM HMMA 801 Glossary of Terms for Hollow Metal Doors and Frames
- C. ANSI/NAAMM HMMA 841 Tolerances and Clearances for Commercial Hollow Metal Doors and Frames
- D. NAAMM HMMA 820 Hollow Metal Frames
- E. NFPA 80 Standard for Fire Doors and Other Opening Protectives
- F. SDI-122 Installation & Troubleshooting Guide for Standard Steel Doors and Frames
- G. HMMA-820 TN01-03 Grouting Hollow Metal Frames
- H. HMMA-810 TN01-03 Defining Undercuts
- I. HMMA-840 TN01-07 Painting Hollow Metal Products

PART 2 - RECEIVING AND STORAGE OF MATERIAL

2.01 RECEIVING MATERIAL

Upon delivery, hollow metal products must be thoroughly inspected for damage by the receiving party able to judge acceptability and who has the authority to sign for the materials acceptability. When provided, follow the manufacturer's instructions for receiving material. Cardboard and other wrappings are to be removed for inspection. In all cases damaged product deemed to be unacceptable, must be noted on the Bill of Lading. Claims of freight damage will not be honored by the freight carrier unless the damaged items are noted on the Bill of Lading at the time of delivery. In addition the hollow metal supplier must also be notified immediately, in writing, so that the supplier and manufacturer can participate in recommending the best course of action. Under no circumstances should material be refused without contacting the party responsible for shipping the material. When material is damaged the freight carrier must be requested to do an inspection of the damage. This procedure will help expedite the repair or replacement of the damaged items and the processing of the damage claim with the freight carrier.

During shipping and handling minor surface scratches and/or scuffing may occur. These areas must be promptly cleaned, finished smooth and touched up by the receiving party with a direct to metal (DTM) rust inhibitive primer. Touching up damaged areas with DTM primer that is comparable to the manufacturers and compatible with the finish paint specified will prevent rusting and maximize finish paint adhesion.

2.02 ON SITE STORAGE

Proper storage of hollow metal products at the construction site will prevent damage. Cardboard and other wrappings are to be removed to promote air circulation. Steel products that have not been finished painted must be protected from exposure to conditions such as high humidity, salt air, rain, snow, etc. The factory applied primer on steel products is porous to properly receive and hold finish paint. Water or moisture in contact with primer coated steel will seep through to the steel. An electrolytic action then follows, resulting in corrosion and causing the paint film to lose adhesion. The presence of oxygen at the water-air interface behind the loosened paint film accelerates corrosive action. The prime coat further deteriorates and rust begins to form.

Even when zinc coated steel is used to provide corrosion resistance, manufacturers of hollow metal door and frame products have found that one week of product exposure to water, due to improper storage, can be equivalent to at least a year of outdoor exposure to the elements.

NOTE: Paint manufacturers advise that the primer typically used by hollow metal manufacturers should receive a finish coat of paint within 30 days of delivery. It is the responsibility of the General Contractor to sand, touch up and clean prime painted surfaces prior to finish painting in accordance with the finish paint manufacturer's instructions.

When storing hollow metal doors and frames at the job site the following procedures must be followed.

1. All material must be stored in a dry area. It must not be exposed to moisture.
2. Do not use non-vented plastic or canvas to cover hollow metal product. These materials trap moisture creating a humidity chamber, which promotes deterioration of the primer and corrosion of base metal.
3. Store doors and frames in an upright position. Figures 1 and 2

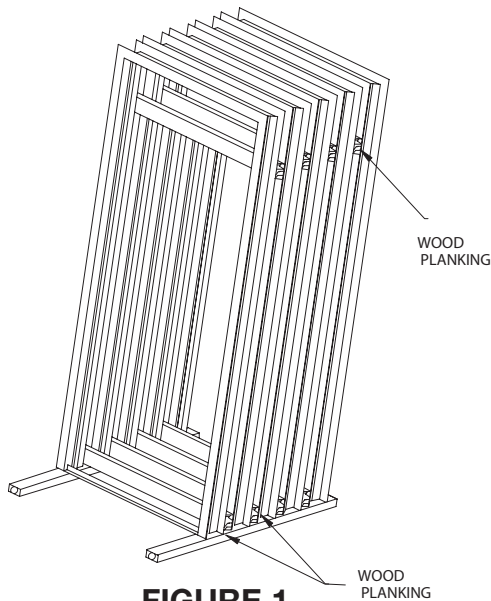


FIGURE 1
FRAME STORAGE

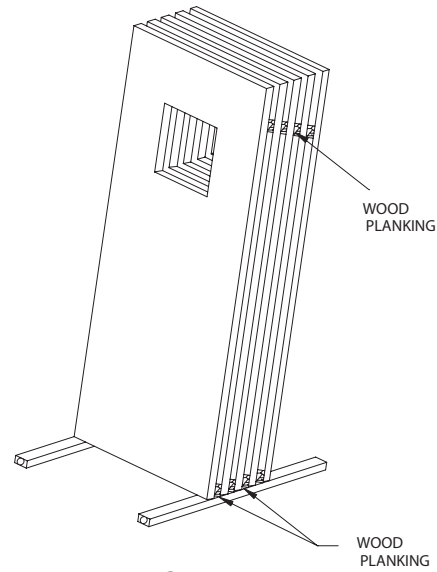


FIGURE 2
FRAME STORAGE

4. Place no more than 5 doors or 3-sided welded frames in a group to minimize the likelihood of damage due to excess handling. Special care and consideration must be given to multi-opening frames, transom, sidelight window assemblies and frames with special profiles.
5. Place all material on planking or blocking at least 4 in. (100 mm) off the ground, 2 in. (50 mm) off a paved area or the floor slab.
6. Provide space between all units to permit air circulation.

PART 3 - INSTALLATION OF FRAMES

3.01 GENERAL

Welded door frames are checked at the factory to ensure that they are square and free of twist during fabrication. Temporary steel spreaders are attached at the jamb bases to minimize misalignment or other damage during shipping and handling. The spreaders are for shipping and handling purposes only and must be removed before installing the frame.

At no time are the spreaders to be left in during installation.

In spite of precautions, frames can and sometimes do arrive at the job site with minor alignment deviations. It is normal that minor deviations from true form and alignment are to be corrected at time of installation by the contractor responsible.

Install hollow metal products using persons experienced and trained in the handling and installation of hollow metal products, having successfully accomplished installations of similar scope and size. They need to be able to read and understand architectural plans and specified hardware requirements.

3.02 PRIOR TO INSTALLATION

The installer is to perform the following prior to installation:

1. The area of the floor on which the frame is to be installed and the path of the door swing to be checked for flatness and levelness. Permissible tolerance is $\pm 1/16$ in. (1.5mm). If the floor exceeds this, it is the general contractor's responsibility to correct the area that is out of tolerance before the frame is installed.
2. Frame is to be checked for correct opening number, size, swing, material thickness, fire rating and hardware requirements. If product does not comply with contract documents do not install and contact supplier.
3. Remove temporary steel spreaders from welded frames. Marks caused by the removal of spreader bars to be restored and refinished using direct to metal primer.
4. When knock-down frames are used, the manufacturer's recommended assembly procedures must be followed.

3.03 INSTALLATION TOLERANCES

During the installation of the frame, check the opening width, opening height, squareness, alignment, twist and plumbness. Permissible frame product installation tolerances are to be maintained within the following limits: See Figure 3.

Opening width – Measured horizontally from rabbet to rabbet at top, middle and bottom of frame; $+ 1/16$ in. (1.5 mm), $-1/32$ in. (0.8 mm).

Opening height – Measured vertically between the frame head rabbet and top of floor or bottom of frame minus jamb extension at each jamb and across the head; $+ 1/16$ in. (1.5 mm) – $1/32$ in. (0.8 mm).

Squareness – Measured at rabbet on a line from jamb, perpendicular to frame head; not to exceed $1/16$ in. (1.5 mm).

Alignment – Measured at jambs on a horizontal line parallel to the plane of the face; not to exceed $1/16$ in. (1.5 mm).

Twist – Measured at opposite face. Corners of jambs on parallel lines, perpendicular to the plane of the door rabbets; not to exceed $1/16$ in. (1.5 mm).

Plumbness – Measured at jambs on a perpendicular line from the head to the floor; not to exceed $1/16$ in. (1.5 mm).

These tolerances provide a reasonable guideline for proper installation of hollow metal frame product. However, it should be noted that the cumulative effect of the installation tolerances at or near their maximum levels could result in sufficient misalignment to prevent the door from functioning properly. Installers must be careful not to create a tolerance buildup. Tolerance buildup occurs when several tolerances are at or near their maximums. Care should be taken to keep deviation from each of these tolerances as close to zero as possible.

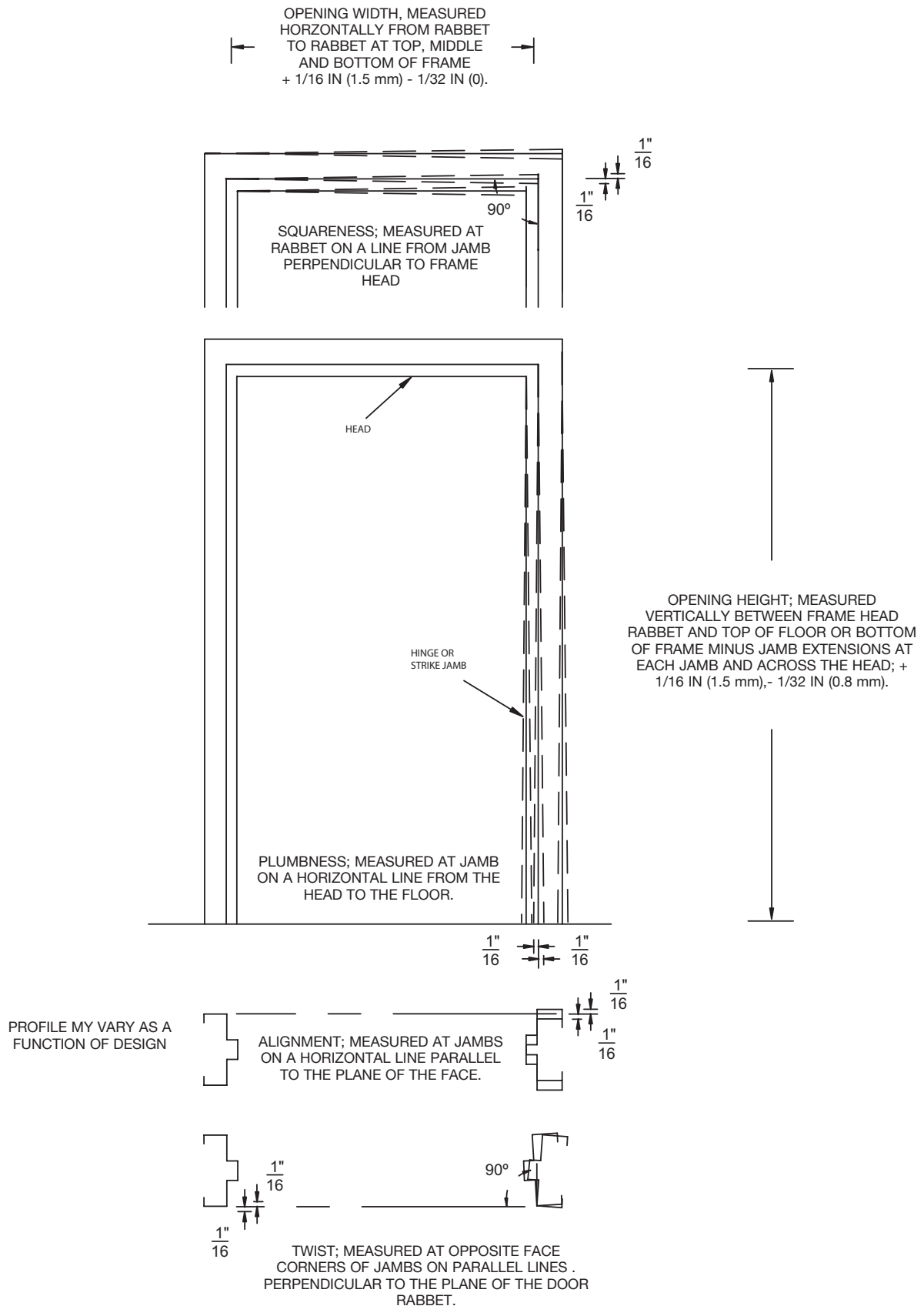


FIGURE 3
FRAME INSTALLATION TOLERANCES

3.04 TYPICAL INSTALLATION PROCEDURES, PRIOR TO WALL CONSTRUCTION

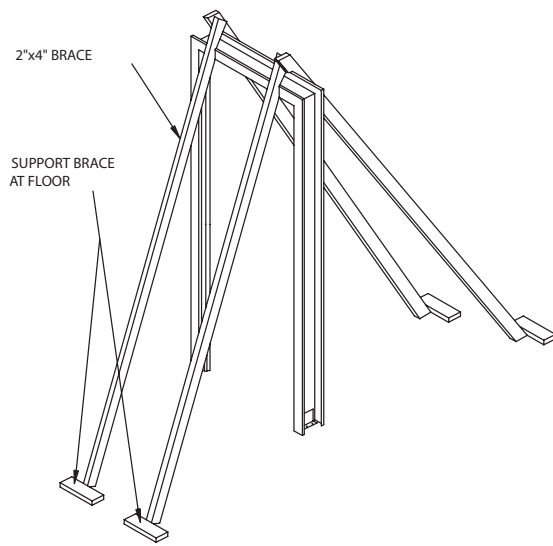


FIGURE 4
FRAME BRACING

Position frame in the correct location.

Brace the frame as shown, Figure 4. Do not brace in the direction of intended wall.

With frame in position, install the temporary wood spreaders. The wood spreader, Figure 5, must be square and no less than 1 in. (25 mm) thick. Correct length is the door opening width between the jambs at the header. Cut clearance notches for frame stops. Spreader must be nearly as wide as jamb depth for proper installation. Install a spreader at the bottom of the frame and a second at the mid height to maintain proper door opening width and to prevent bowing of the jambs during wall construction, Figure 6. Leave spreaders in place until the frame is set permanently in the wall.

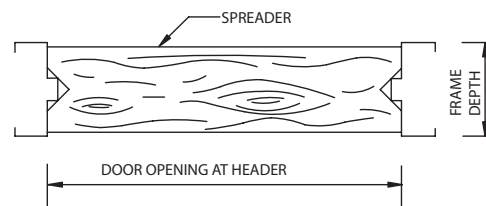


FIGURE 5
WOOD SPREADER

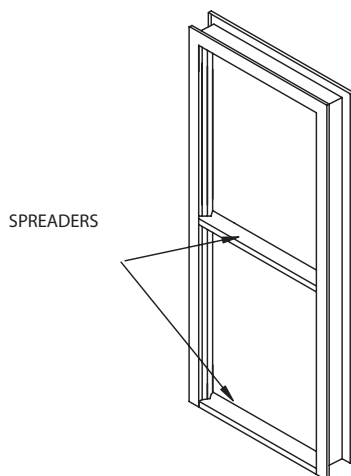
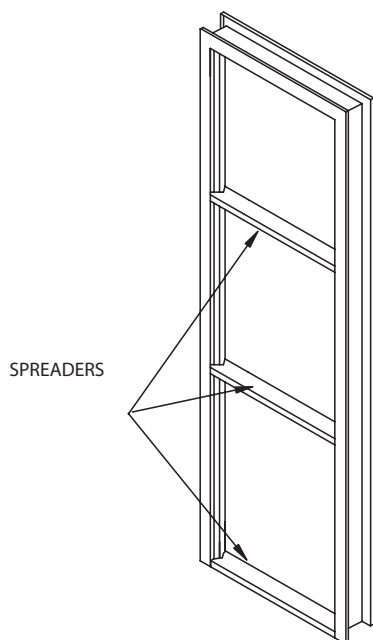


FIGURE 6
SPREADER LOCATION



Frames with jamb opening heights greater than 8 ft. (2438 mm) or frame face dimensions less than 1-1/2 in. (38 mm), require additional wood spreaders. Space the wood spreaders a maximum of 36 inches (914 mm) apart between header and bottom of frame, Figure 7.

FIGURE 7
SPREADER LOCATION AT
LARGE JAMB OPENING HEIGHTS

Frames with sidelights where the sidelight sill intersects the door jamb, it is imperative that a wood spreader is located at this location, Figure 8.

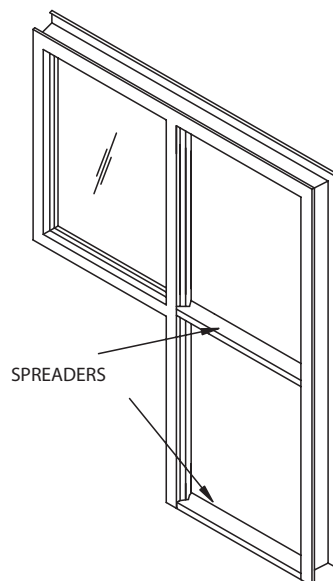


FIGURE 8
SPREADER LOCATION AT SIDELIGHTS