



MRB

**INSTALLATION OF BLAST RESISTANT DOORS AND FRAMES
Medium Range (MRB) Blast Pressure**

Excerpts From:
Hollow Metal Technical and Design Manual
The National Association of Architectural
Metal Manufacturers

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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 blast 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. Even the best designed and most carefully made frames and doors, if improperly installed, will not function properly. Installation work is usually done by carpenters, but in some areas the ironworkers may have jurisdiction.

Overly Door Company is concerned that our product is properly handled and protected after delivery, and that the necessary care and skills are exercised in the setting of our frames and hanging of our doors. Frames out of true alignment and doors not operating properly are deficiencies that can not be tolerated. It is important to all concerned, therefore, that attention be given to the essential requirements of good practice in field installation work. Use of these installation instructions along with the shop drawings provided and your attention to good workmanship will provide the proper installation for Overly doors and frames.

Delivery and Receiving of Material

Blast doors and frames are fabricated in accordance with the shop drawings approved by the architect or engineer. Preparation for hardware or other items to be supplied by others is provided in accordance with the information furnished to the manufacturer by the hardware supplier or by those other suppliers or trades responsible for this work.

Should any material be damaged in shipment, claims should immediately be filed by the receiving party, who should notify the delivering carrier's regional office by telephone or in writing, requesting inspection of the damaged

material. If desired, Overly Door Company will cooperate by furnishing copies of shipping papers to help expedite the claim. For further direction please see the "Freight Claim" document on the Overly website at overly.com

If a claim is to be made for any error or deficiency in the metal work itself, it is imperative that the manufacturer be so notified in writing before initiating any corrective work in the field. The Overly Door Company has its 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.

On-Site Storage

Improper storage of doors and frames at the construction site often results in deterioration of the primer coat of paint. Such deterioration is a continuing source of aggravation to all concerned.

Particular attention must, therefore, be given to steel products having only a primer coat of paint, if corrosion is to be avoided. Because the protective primer coat must be porous to properly receive and hold finish paints, water or moisture in contact with prime-coated steel will seep through to the steel by capillary action. An electrolytic action then follows, resulting in corrosion and causing the paint to lose adhesion. The presence of oxygen at the water-air interface behind the loosened paint film accelerates corrosive action and further prime coat deterioration.

Manufacturers of metal doors have found that one week of product exposure to water because of improper storage is equivalent to at least a year of outdoor exposure to the elements.

It is imperative, therefore, that those parties who are responsible for the storage of primed metal work at the job

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site be carefully instructed as to proper storage procedures. All ferrous metal products should be stored where they are least likely to be exposed to or come in contact with water.

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

1. Upon receipt each crate shall be opened and the contents reviewed against the packing list to ensure all items listed on the packing list are in the crate.
2. Check the material for moisture. During transit it is possible that the crates may become wet. Remove any packaging material that has become wet and allow door and frame unit to dry prior to any long term storing of the units.
3. The door and frame units can remain in the crates until needed. If the door and frame units are to be removed from the original crates they should be placed on planking or blocking, at least 4" off of ground, 2" off a paved area or floor slab.
4. Every effort should be made to store the door and frame unit(s) inside under cover. If an inside storage location is not available the door and frame units should be sufficiently covered / tarped to prevent the units from getting wet.
5. Do not permit cardboard or paper containers or wrappings to become wet during storage. If this should occur, remove this material immediately.

Installation Procedure - Introduction

Note: Typically the Overly MRB Series doors and frames are shipped from the factory as assembled units. However,

there are some instances when the unit is shipped in pieces or "Knocked Down" if this is the case, please refer to the "**Installation of 3 Piece Frame**" section on Page 12.

Prior to installation of the door assemblies, the installer should obtain a copy of the Overly "As-Built" Drawings and applicable architect's plans to be used in conjunction with these instructions. **Some of these instructions are "general in nature" but are applicable to any Overly Model MRB Blast Door.**

The frame assembly provided consists of a 3-sided welded unit that was factory inspected prior to shipment to assure that they are square and that no jamb twists have occurred during their fabrication. To minimize misalignment or other damage during shipment, the frames are packed and loaded onto the carrier by personnel experienced in frame packaging. However, in spite of these precautions, the frames can and sometimes do arrive at the jobsite with minor deviations. Should this occur, most out-of-square and misalignment problems can be readily corrected during installation.

The frame anchorage system is custom designed to accommodate project opening requirements to suit your specified wall conditions. It is necessary to refer to the "As-Built" shop drawings of your individual door and frame assembly for the anchorage type.

At this time, review the shop drawings for the openings and proceed with the type of installation required. Due to the blast requirements on these doors, the installation guidelines must be adhered to. At any time during the installation of the product, if questions arise, call **Overly Door at 1-800-979-7300**.

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“Weld-in Style” Installation

Note: In most cases the Overly MRB series Door and Frame units are factory “Pre-Hung” and shipped as a unit.

Note: The steel channel sub-frame openings that are to receive the pre-assembled door and frame unit should be accurately constructed. The openings of the sub-frames should be made approximately 1/2" wider than the overall frame width dimension and 1/4" higher than the overall frame height to provide a clearance of 1/4" on all sides. This will allow for squaring the frame during installation.

Note: Overly requires the use of metal shims when shimming is required.

Caution: Avoid getting dirt or construction debris around the opening. Keep the sill area clean, especially for door and frame units with weatherstripping / perimeter seals and/or door bottoms. This cleanliness will avoid unnecessary damage to the sealing system and ensure ease of later adjustment.

1. Check that the floor is level in the swing area of the door panel(s).
2. Verify the wall opening dimensions before beginning installation of the door unit. If the sub-frame is twisted, skewed, bowed or out of plumb, contact Overly Door Company before proceeding.
3. Check material received against the packing list before proceeding with installation to assure all parts needed are available.
4. Before the door & frame are set into the opening, one set of weld bars will need to be welded to the embed frame. Size and cut these weld bars to length. Start with the head jamb.

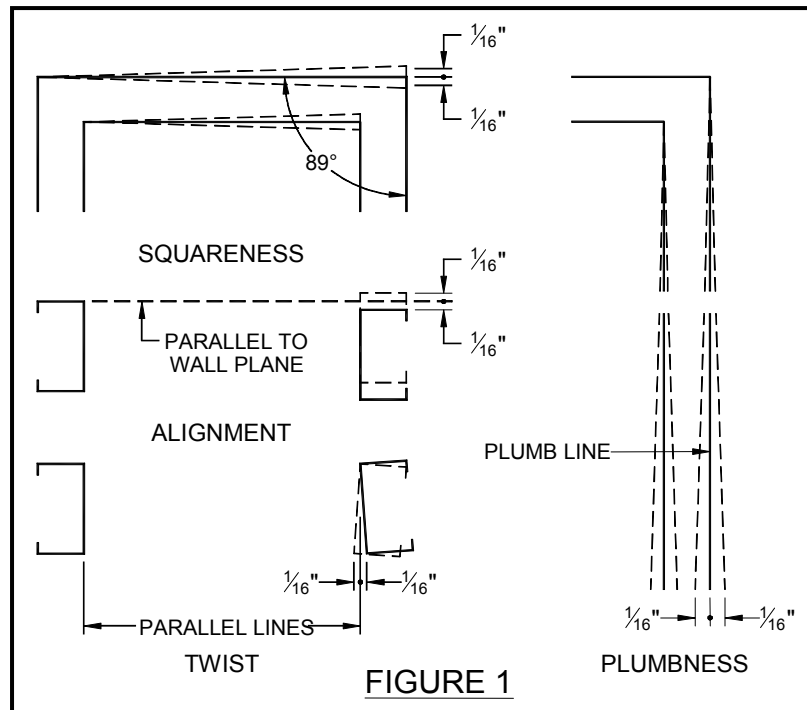
Locate and weld the bars in place as shown on the Overly “As Built” drawings. Butted corners are used.

5. Place the door and frame in the prone position laying flat on the floor with the hinge side facing up, in preparation for lifting the unit vertically into the opening. On each door panels front face there are three 1/2-13 set screws, two at the top and one at the bottom, that are threaded flush into the door face. Remove the two set screws, at the top. Save the set screws for reinstallation after the door is hung. Insert and tighten the two lifting shackles provided by Overly. Each lifting shackle has a load capacity of 1500 lbs.
6. Connect a **load-rated chain or strap** with sufficient lifting slack between the two lifting lugs.
7. Using a fork-lift, adjust the forks to the proper width and place the forks through the chain or strap. Tilt the forks up about 10 degrees. Lift the door and frame assembly into the vertical position and carefully guide it into the opening. Once the assembly is in place, brace firmly into position.
8. Set the frame into the opening and against the weld bars per Overly “As Built” shop drawings. **‘DO NOT’** remove the temporary spreader bar attached to the frame. Securely brace the door in the vertical position. Once secure, remove forklift and lifting chain or strap. Lifting lugs can now be removed and the set screws reinserted.
9. Check that the frame is square and aligned by measuring the diagonal dimensions and "cross string" the frame to insure that the jambs are

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properly set. See Figure 1 for allowable tolerances.

10. Align the hinges in the vertical plane. A plumb line from the top hinge shall pass directly in line with the bottom hinge and all hinges in between. Tolerance from plumb and racking of the frame from square shall be $\pm 1/16$ ".
11. The frame should now be checked for out-of-plane or alignment by laying a carpenter's level against the frame. A straight line between two
12. Finally, check the frame for twist by measuring the frame opening on the inside and outside of the frame. Tolerance for frame twist is $\pm 1/16$ "
13. Shim between door frame and wall opening as necessary.
14. Add additional temporary bracing to hold the frame in the established vertical alignment.



15. Size and cut the remaining frame weld bars to length. Butted corners are used.
16. Initially, tack weld the head pieces of the frame weld bars to the steel sub-frame and the door frame. Next, do the same for the jamb pieces. Refer to Figures 2, and 3.
17. Recheck the frame for plumb, squareness, alignment and twist. Steps 10, 11 and 12.
18. Operate the door and latching mechanism several times to ensure proper operation.
19. If proper alignment is achieved, and the door and latching mechanism operate properly apply the finish welds as shown on Overly "As Built" shop drawings.
20. Remove temporary steel spreader from bottom of frame.

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21. Open and close the door and operate the latching mechanism several times to ensure proper operation.
22. Caulk frame continuously around perimeter of frame on both sides of the frame as shown on the Overly "As Built" shop drawings
23. Once proper door operation is confirmed proceed with "**Door Clearance Adjustment**".
24. After the door clearances are adjusted install the floor strike (on double doors only). Please refer to the "**Floor Strike Installation**" section of these instructions.

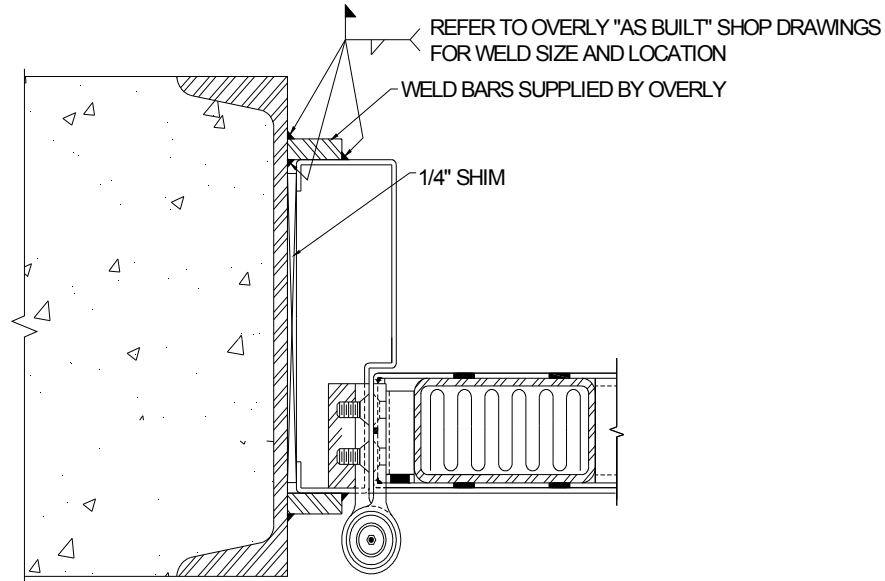


FIGURE 2 – TYPICAL FRAME SECTION @ HINGE SIDE
Hinge jamb is shown strike jamb is similar

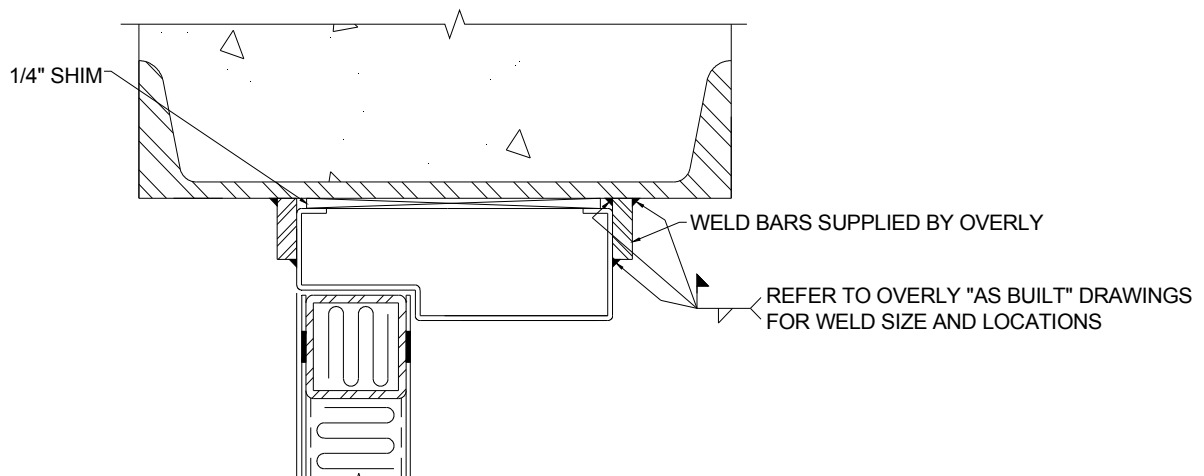


FIGURE 3 – TYPICAL HEAD SECTION

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“Bolt-in Style” Installation

Note: In most cases the Overly MRB series Door and Frame units are factory “Pre-Hung” and shipped as a unit.

Note: The rough openings that are to receive the pre-assembled door and frame unit should be accurately constructed. The rough openings should be made approximately 1/2" wider than the overall frame width dimension and 1/4" higher than the overall frame height to provide a clearance of 1/4" on all sides. This will allow for squaring the frame during installation.

Note: Overly requires the use of metal shims when shimming is required.

Caution: Avoid getting dirt or construction debris around the opening. Keep the sill area clean, especially for door and frame units with weatherstripping, perimeter seals and/or door bottoms. This cleanliness will avoid unnecessary damage to the sealing system and ensure ease of later adjustment.

1. Check that the floor is level in the swing area of the door panel(s).
2. Verify the wall opening dimensions before beginning installation of the door unit. If the rough openings have irregularities or not accurate contact Overly Door Company before proceeding.
3. Check material received against the packing list before proceeding with erection to assure all parts needed are available.
4. Place the door and frame in the prone position laying flat on the floor with the hinge side facing up, in preparation for lifting the unit vertically into the opening. On each door panels front face there

are three 1/2-13 set screws, two at the top and one at the bottom, that are threaded flush into the door face. Remove the two set screws, at the top. Save the set screws for reinstallation after the door is hung. Insert and tighten the two lifting shackles provided by Overly. Each lifting shackle has a load capacity of 1500 lbs.

5. Connect a **load-rated chain or strap** with sufficient lifting slack between the two lifting lugs.
6. Using a fork-lift, adjust the forks to the proper width and place the forks through the chain or strap. Tilt the forks up about 10 degrees. Lift the door and frame assembly into the vertical position and carefully guide it into the opening.
7. Set the frame into the opening and position as shown in the Overly “As Built” shop drawings. **‘DO NOT’** remove the temporary spreader bar attached to the frame. Securely brace the door in the vertical position. Once secure, remove forklift and lifting chain or strap. Lifting lugs can now be removed and the set screws reinserted.
8. Check that the frame is square and aligned by measuring the diagonal dimensions and "cross string" the frame to insure that the jambs are properly set. See Figure 1 for allowable tolerances.
9. Align the hinges in the vertical plane. A plumb line from the top hinge shall pass directly in line with the bottom hinge and all hinges in between. Tolerance from plumb and racking of the frame from square shall be +/- 1/16".

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10. The frame should now be checked for out-of-plane or alignment by laying a carpenter's level against the frame. A straight line between two points shall not exceed 1/16" in either direction.
11. Finally, check the frame for twist by measuring the frame opening on the inside and outside of the frame. Tolerance for frame twist is +/- 1/16"
12. Shim between door frame and wall opening as necessary.
13. Add additional temporary bracing to hold the frame in the established vertical alignment. Be sure to keep the bracing clear of the door as it may be necessary to have the door ajar when fastening the concrete anchors.
14. Use the door frame as a template, drill thru the frame into the wall for the concrete anchors supplied. Refer to the Overly "As Built" shop drawings for size and location of anchors. See Figure 4 and 5.
15. Install concrete anchors per manufacturer's instructions.
16. Recheck the frame for plumb, squareness, alignment and twist. Steps 9, 10 and 11.
17. Operate the door and latching mechanism several times to ensure proper operation.
18. After proper alignment is achieved, and the door operation is confirmed the anchors may be fully torqued.
19. Remove temporary steel spreader from the bottom of the frame.
20. Open and close the door and operate the latching mechanism several times to ensure proper operation.
21. Caulk frame continuously around perimeter of frame on both sides of the frame as shown on the Overly "As Built" shop drawings.
22. Once proper door operation is confirmed proceed with "**Door Clearance Adjustment**".
23. After the door clearances are adjusted install the floor strike (on double doors only). Please refer to the "**Floor Strike Installation**" section of these instructions.

Note: If a Drop-In type anchor is used the door and frame unit will have to be removed from the opening so the drop-in anchor can be properly drilled and set.

Note: DO NOT fully torque the concrete anchors.

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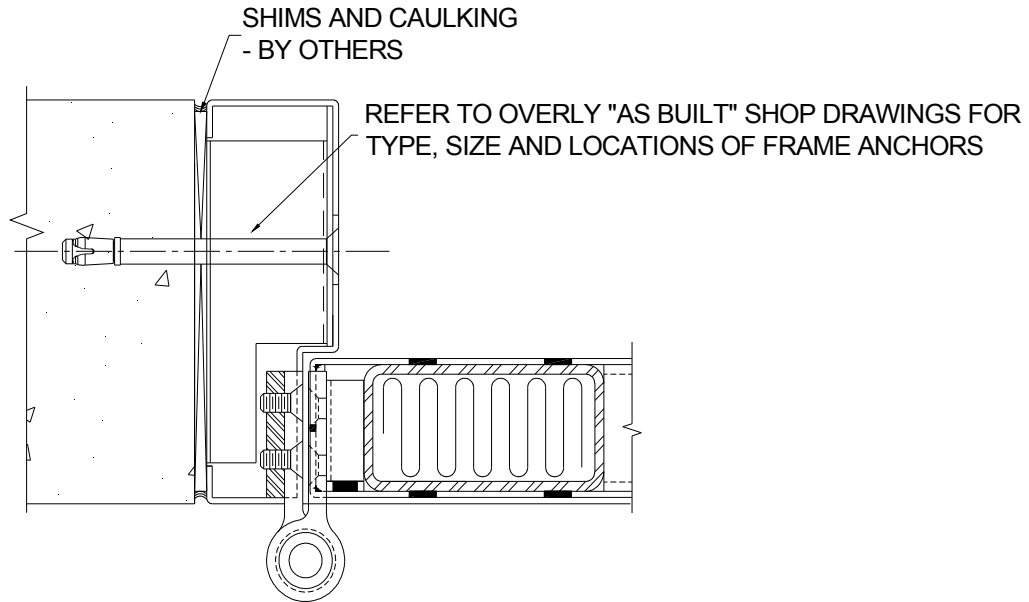


FIGURE 4 – TYPICAL FRAME SECTION @ HINGE SIDE

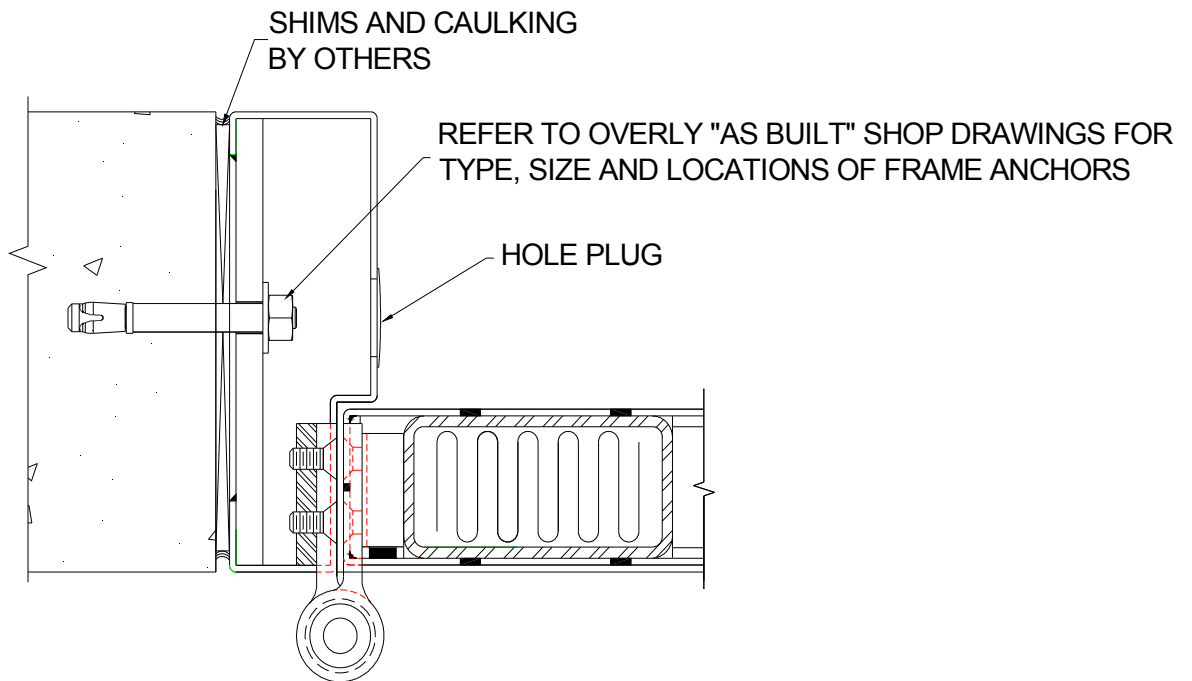


FIGURE 5 – ALTERNATE BOLT-IN DESIGN

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Door(s) Clearance Adjustment

Before proceeding with the installation of any other hardware or perimeter seals it is essential that uniform clearances between door(s) and frame are maintained to achieve the proper blast/pressure ratings for which the door and frame unit is designed, and also to maintain proper operation of the latching hardware.

In general the door(s) and frame(s) have been sized to provide the following clearances, however please review the Overly "As Built" shop drawings for job specific door / frame clearances:

1/8" between Door(s) and Frame Head

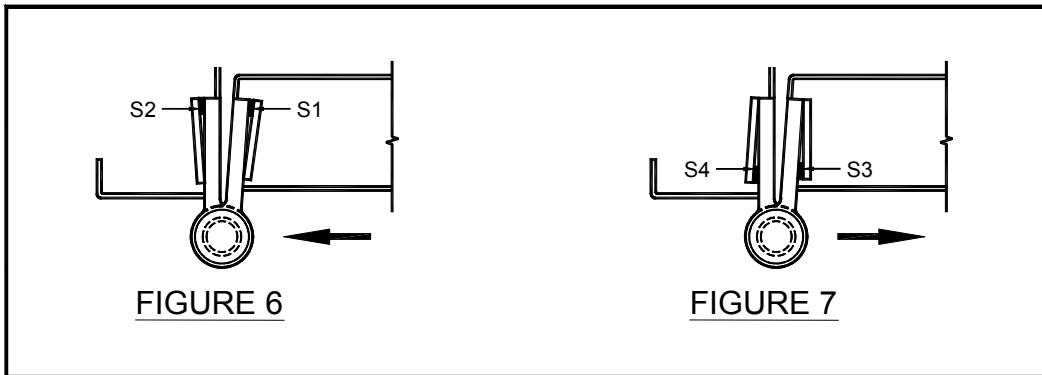
1/8" between Door and Frame at the Hinge Jamb(s)

3/16" between Door and Frame at the Strike Jamb

3/16" for pairs of Doors at the meeting stile

Adjustments can be made by following the steps outlined below:

Note: Overly requires the use of metal shims when shimming is required, due to the weights of the doors.



To move the door toward the hinge jamb, see Figure 6 above and follow these steps:

1. If shim **S1** is used, the door will move towards the hinge jamb of the frame. If shim **S2** is used, both the door and the hinge barrel will move towards the frame.
2. If both shims **S1** and **S2** are used, the door will move further towards the hinge jamb of the frame than by using either **S1** or **S2** alone, and the hinge barrel will be moved to the same position as by using shim **S2** alone.

To move the door away from the hinge jamb, see Figure 7 above and follow these steps:

1. If shim **S3** is used, the door will move towards the strike jamb of the frame (or the center of the opening for pairs). If shim **S4** is used, both the door and the hinge barrel will move towards the strike jamb of the frame.
2. If both shims **S3** and **S4** are used, the door will move further towards the strike jamb of the frame than by using either **S3** or **S4** alone, and the hinge barrel will be moved to the same position as by using shim **S4** alone.

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In addition to adding shims to the hinges to achieve the proper clearances each hinge is equipped with a socket set screw so that the door can be adjusted vertically to achieve the proper clearances at the top and bottom of the door. See figure 8. Using a 3/8" allen wrench, and starting at a middle hinge, tightening the set screw will raise the door while loosening the set screw will lower the door.

Note: If lowering the door, the adjustments may need to be made to all the hinges in order to get the door to lower.

After the adjustment is complete and the door is in the proper position tighten the set screw on the remaining hinges so there is some tension on the screw but the door does not move.

Grease the Hinges: The Overly M-1800 hinges were pre-greased at the factory with a small amount of lubricant. After installation and painting of the assembly is complete, lubricate the hinges with Valvoline VV985 Automotive and Industrial General Multi-Purpose Grease, or equal.

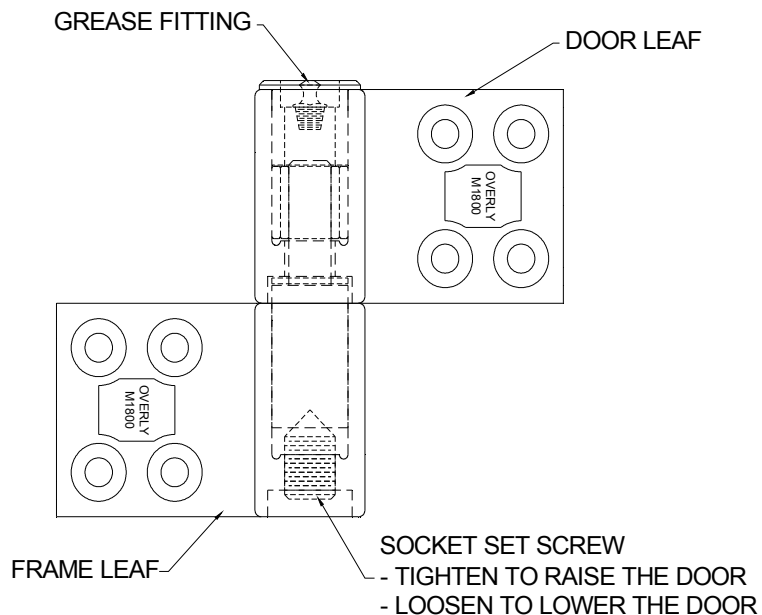


FIGURE 8 – M-1800 HINGE ADJUSTMET

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Installation of 3 Piece Frame

Due to shipping constraints some large or oversize door and frame units are shipped in pieces sometime referred to as "Knocked-Down" or "KD". These units are shipped disassembled for assembly at the job site prior to installation. The size of these units as well as the fact that the units are "Knocked Down" place a greater responsibility on the installer, who must assemble them and make sure that, in spite of job conditions they are square and in true alignment. Knock Down frames can be either welded or bolted in to the opening. Refer to Figure 9 for typical corner details.

1. Using the Overly "As Built" shop drawings and the packing list locate all items needed for the frame assembly.
2. Find a flat area on the floor or ground near the opening large enough to assemble the frame.
3. Using the supplied fasteners attach each side jamb to the head section.
4. Tighten each fastener, while keeping the corners square and maintaining the jamb opening dimensions.
5. Weld the front and back of each corner while keeping the corners square while holding the required frame dimensions.
6. For ease of installation a temporary spreader (not included) should be welded to the bottom of the frame in order to keep the frame square and maintain the jamb opening width. If the frame is over 10 ft. tall additional spreaders should be added at 1/3 points to help maintain the jamb opening over the entire height of the frame.
7. Proceed with the frame installation as described earlier in these instructions based on the frame anchorage type.

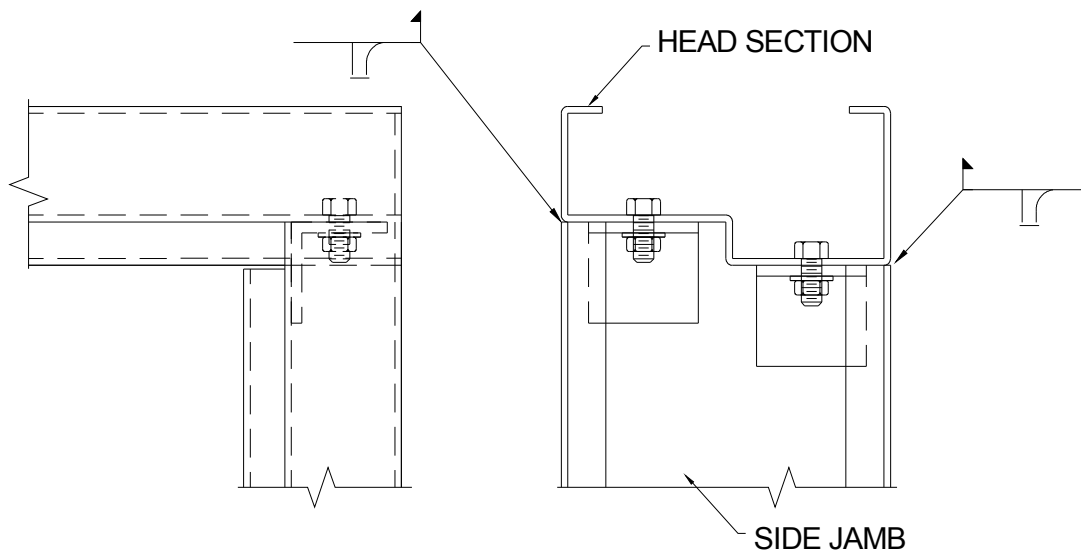


FIGURE 9 – KNOCK DOWN FRAME CORNER DETAIL
Typical Both Corners

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Floor Strike Installation

For pairs of doors a floor strike needs to be installed in/on the floor please refer to the Overly "As Built" shop drawings for floor strike mounting details.

1. After the pair of doors is installed and the door clearances are adjusted close each door and extend the top flushbolt pin into the frame.
2. Extend the bottom flushbolt and mark the floor where the bottom flushbolt contacts the floor.
3. Accurately position the floor strike on this mark and mark the anchor holes.
4. Drill anchor holes per the anchor manufacturer's instructions and mount the floor strike. Refer to Figure 10
5. If the floor strike is to be mounted flush with the top of the floor. Chip out the concrete floor at this time and mount the floor strike as described above. Refer to Figure 11.

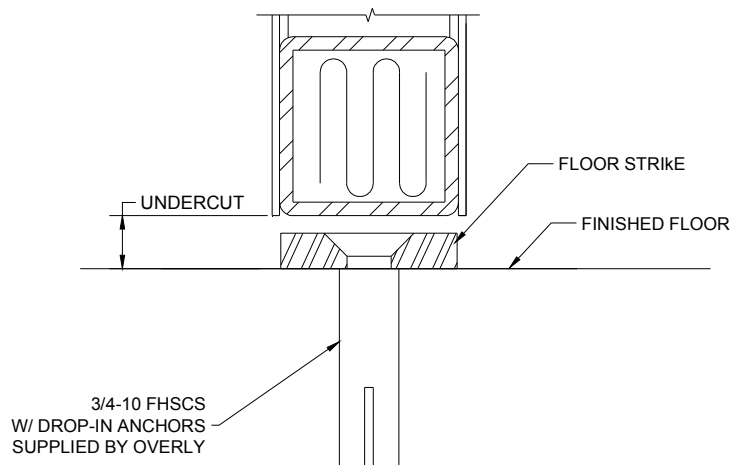


FIGURE 10 – FLOOR STRIKE – SURFACE MOUNT

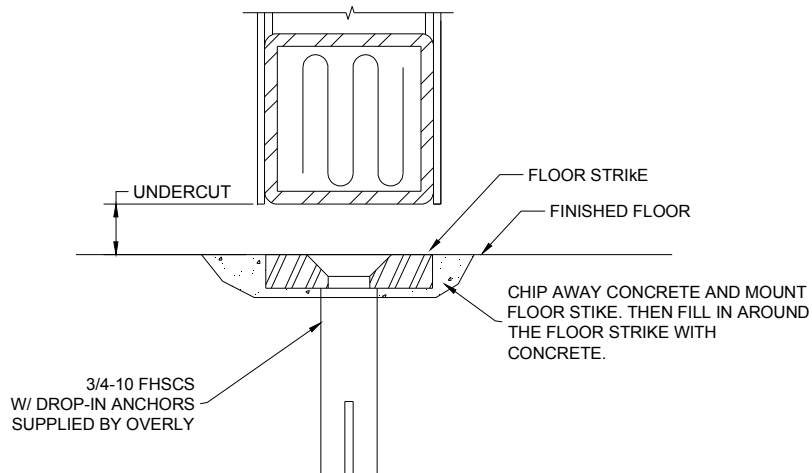


FIGURE 11 – FLOOR STRIKE – FLUSH MOUNT

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Hardware Installation

It is the responsibility of the installer to hang the doors and install all hardware. In most cases the MRB style door units are shipped with the hinges and latching hardware already installed at the factory. However, there are instances when the hinges are not installed and the lock/latch is supplied by others and needs to be installed in the field. Holes for the mounting of template hardware are drilled at the factory. This is not true, however, of preparations for surface mounted items. The drilling and tapping of holes for mounting such items is the responsibility of the installer. Please refer to the hardware manufacturer's installation instructions.

Weatherstripping Installation

Most of the MRB style doors are equipped with the Overly Heavy Duty

Gaskets / Weatherstripping. The metal retainers for the gaskets are pre-fitted at the factory then the neoprene seal is applied and the assembly is shipped loose in order to prevent damage. Locate the components of the gasket system: (Gaskets, 12-24 PHMS and #12 Flat Washers). The frame(s) are predrilled and tapped at the factory. See figure 12.

Note: Prior to installing the gaskets, the metal gasket retainers, frame(s), and door(s) should be finished painted. It is imperative that the applied paint dries completely and forms a smooth, dry, hard surface. At no time should paint be applied to the neoprene seals.

Note: If a threshold is used the gaskets along the side jambs will need to be trimmed to sit on top of the threshold.

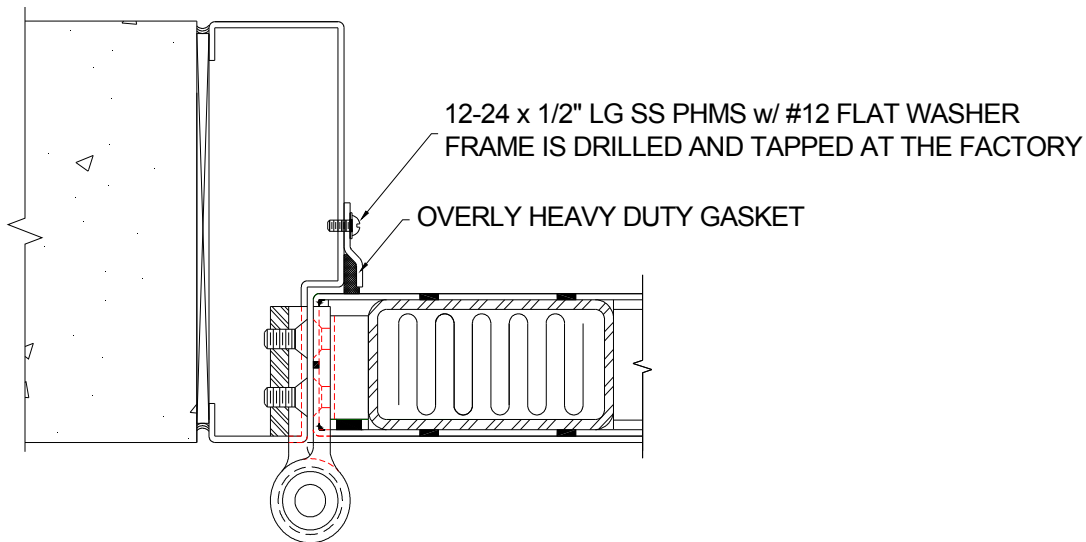


FIGURE 12 – OVERLY HEAVY DUTY GASKET INSTALLATION

1. Locate the head gasket and fasteners and swing the door to the full open position.
2. Though the metal retainers are pre-fitted at the factory the neoprene seal was not so it will need to be trimmed. On the

head of the frame measure the distance from the hinge side stop to the first tapped hole and add 1/8" to this distance. Using this new distance measure from the slot in the metal retainer to a point on the neoprene seal and carefully

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cut a square end. Do the same on the opposite side of the frame and gasket.

3. Install the gasket keeping the screws loose.
4. Push the retainer as far back in the slot as it will go, away from the door side of the frame.
5. Likewise, the metal retainers for the side jambs were pre-fitted at the factory. However, if a threshold is being used, it should be installed prior to mounting the gasket retainers and the bottom of the metal retainers cut so the retainers sit on top of the threshold.

Note: The neoprene seal should extend past the bottom of the side jamb retainers by 1/8"

6. On the hinge jamb measure the distance from the bottom of the head seal to the first tapped hole and add a 1/4" to this distance. Using this new distance measure from the top slot in the metal retainer to a point on the neoprene seal and carefully cut a square end. Do the same for the other side jamb and gasket.
7. Install the gaskets keeping the screws loose.
8. Push the retainers as far back in the slot as it will go, away from the door side of the frame.
9. Close and latch the door(s). Push the jamb and head retainers up against the door until the neoprene seal is just touching the door and you cannot see clearance between

the seal and door. Torque down all gasket retainer screws until the retainers can only be moved by driving them with a hammer and hardwood block.

Caution: Do not smash the gaskets against the door face. Only light contact is required for the neoprene seal to be effective.

10. Once you push the gaskets/retainers forward and torque down the screws, you can check the contact by trying to insert a business card between the gaskets and the face of the door. If the card penetrates the interface, then the gasket is not in contact with the door. Mark this location and then using a hardwood block and hammer, drive the gasket retainer towards the door until the gasket makes contact. Use the business card to check for contact after each tap as you do not want to drive the retainer too far forward. Repeat for each location where business card penetrates around perimeter.

In some cases a commercial weatherstripping is used. If this is the case, please install the weatherstripping per the manufacturer's installation instructions. Both the fasteners and instructions are enclosed with the weatherstripping.

Door Bottom Installation.

Install the aluminum door bottom per the door bottom manufacturer's installation instructions. Both the fasteners and instructions are enclosed with the door bottom.