

Steel Door Frame Installation in Masonry Construction



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This manual provides step-by-step instructions for the installation of a steel door frame in masonry construction. It is a companion piece to the SDI video *How to Install Steel Door Frames in Masonry Construction*. Please watch the video for a demonstration of all steps in this process. To view the video, scan the QR code below or visit the SDI website at www.steeldoor.org.

Link to video.



Frame Installation: Masonry Construction

Regardless of the type of building project, secure openings require proper frame installation. This manual will walk you through the three phases of the installation process for a steel door frame in masonry construction.

- Prepare:** Select the right materials and tools for this project.
- Install:** Set the frame plumb, level & square; complete frame installation. At least a 2-day process with masonry construction.
- Verify:** Test the door to ensure that it is functioning properly.

Step 1: Preparation



1. Locate the frame at the door opening location. Verify that the frame numbers match those of the opening location.
2. Compare the handing and size of the frame to the drawing.
3. Check the hardware schedule. Contract your distributor if information does not match.
4. Verify that the proper hardware reinforcements are installed on the frame. Also verify the hinge size, strike type and closer mounting.
5. The floor finish will affect the way the door should be installed. Determine if the floor finish will be:
 - Concrete
 - Carpet
 - Wood
 - Tile

As shown in the image below, we are using a 4-1/2" hinge, an ASA strike and both regular arm and parallel arm closer reinforcements. Wire anchors work in a variety of masonry applications and will be used in this installation as well.



NOTE: Some wood and tile finishes, such as quarry, are up to 3/4" thick.

EXPERT INSIGHTS:

- ✓ Before setting the frame, always verify that the floor conditions match the drawing that you are using.
- ✓ Circumstances may call for mounting the frame directly to the concrete.
- ✓ You may be installing the door frame prior to floor installation. It's critical that you know the specifications of the floor that will be laid, so that the door will not drag or have too large of a gap when the installation is complete.

6. Adjust the frame to match the floor finish thickness. Frames are provided with adjustable base anchors that allow you to adapt to floors that are up to 1-3/8" thick.



Pre-welded frame



Spreader bar

CAUTION: Not all floor anchors are adjustable. We recommend that you contact your job supervisor and verify the floor anchor requirements of the finish flooring. SDI manufacturers may provide either adjustable or fixed anchors.

7. The frame may be shipped already welded or it may ship KD (knock down).
8. Install base anchors to the frame using the screws provided. Pre-welded frames are transported to the job site using a shipping bar to prevent the frame from twisting in transit. **This bar is not to be used as a spreader bar to set the frame.**

EXPERT INSIGHTS:

- ✓ Some assembly is required with KD frames, but it is minimal.
- ✓ Note that each slot has an associated tab.
- ✓ The most important tab connection is at the rabbeted part of the frame; those tabs should be bent in an outward position.

9. Stand the frame up in the wall line at the proposed location.

EXPERT INSIGHTS:

- ✓ The shipping bar comes welded from the factory.
- ✓ It is important that it is properly removed by grinding off. Do not bend or twist off.



Stand the frame up in the wall line

10. Place the spreader, that has been precisely cut to the door opening specification, between the hinges and strike jambs at the floor.

CAUTION: Check the spreader to ensure that it has been cut squarely and accurately. This will help align the jambs as they are anchored to the floor, which is critical to proper installation.



Place spreader between hinges and strike jambs

Step 2: Setting the Frame Plumb, Level & Square



Attach base anchors to floor

11. Attach the base anchors to the floor on each jamb, using a concrete screw or drive pin anchor.
12. Check to ensure the frame has not moved away from the layout lines.
13. Verify that the head of the frame is level.
14. You may need to adjust the base anchors to achieve a level head and proper floor clearance.

EXPERT INSIGHTS:

√ Throughout any frame installation, it is important that the frame is continually checked to be **plumb**, **level** and **square**.

15. Shim the bottom of the jamb with a flat washer or a fender washer if needed.
16. Recheck for level accuracy after you make every adjustment. With the frame in place, the jamb should be temporarily braced.
17. If your installation requires electrical components, now is the time to install conduits or flex cable for low voltage wiring.
18. Install a piece of tie wire around the frame 48" from the finished floor. Twist the wire tight. This creates inward tension to hold the spreader in place.

19. Place another spreader in between the hinge and strike jambs. This mid-frame spreader is important for keeping the frame straight and in alignment.
20. Check the frame for plumb, level and square accuracy. Bend the anchor ear around the stud to hold the anchor in place.
21. As the mason begins to lay the block, the courses should be brought up evenly on both sides of the doorframe.



Bring the courses up evenly



Lay a wire anchor at the third course

- CAUTION:** Be sure not to push the frame out of plumb with the block.
22. Fill the jambs with mortar evenly up both sides. Lightly tap the frame to settle the mortar.
 23. At the third course, or approximately 24" from the floor, lie in a wire anchor on the hinge and strike jambs. Then check the frame again to be sure it is still plumb, level and square in all directions. Make any necessary adjustments.
 24. Continue laying the block, filling the jambs with mortar evenly up both sides and lightly tapping the frame to settle the mortar as you go.
 25. At the sixth course, or approximately 48" from the floor, lay in another anchor on the hinge and strike jambs. Then check the frame again to be sure it is still plumb, level and square. Make any necessary adjustments.
 26. Continue laying the block, filling the jambs with mortar evenly up both sides and lightly tapping the frame to settle the mortar as you go.
 27. After laying 8 or 9 courses, the masonry should be allowed to set overnight. Leave the spreaders and temporary back bracing in place overnight. Before leaving the site for the day, clean any mortar out of the hinge pockets and strike reinforcements. Also clear any mortar droppings away from the base of the frame.



Leave the spreaders in place overnight

Step 3: Completing the Installation (Day Two)

28. Begin day two of your installation by removing the back braces. Be very careful not to damage the doorframe. The spreader should remain in place if at all possible. When using wood stud anchors, bend the ears tightly against the stud.
 29. Evenly fill the jambs with mortar on both sides and lightly tap the frame to settle the mortar.
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30. At the next course, or approximately 72" from the floor, lay in another anchor on the hinge and strike jambs. Again, check the frame to be sure it is plumb, level and square. Make any necessary adjustments.

EXPERT INSIGHTS:

- √ Any time you fill a head more than 42" in length with mortar, you will need to insert a vertical brace to prevent sagging. The brace stretches from the bottom of the head down to the floor.
- √ Shim the vertical brace as needed to maintain a level head on the frame.



Tap the frames to settle the mortar

31. Continue laying the block and filling the jambs with mortar evenly up both sides. Lightly tap the frame to settle the mortar and continue up to the top of the frame. The head will now need to be filled with mortar.
32. Lay the lentil over the frame.

Step 4: Verification

33. Check that the frame head is still level and that no sagging has taken place. If it is level, your frame installation is complete.
34. The frame installation is now complete and ready for the next stage of construction.

The procedures described in this document are only guidelines. Please follow all applicable building codes, standards and accepted practices specific to your geographic location.

For more information, visit www.steeldoor.org.



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