

## **INSTALLATION INSTRUCTIONS**

### for Welded or Bolted Joiner Door Assemblies

All joiner doors and frames are completely assembled and tested for proper fit and function by Deansteel prior to shipment from our factory. Therefore, unless damaged during shipment or on the job site, the door and frame assembly should function correctly after installation.

Proper installation of a door and frame assembly into a bulkhead is critical to both the proper operation and the service life of the unit. The most critical step is the installation of the frame. The biggest “door problem” Deansteel has witnessed over the years is the distortion of the joiner frame due to its being forced into contact with an uneven and out-of-flat bulkhead.

For all bulkhead conditions, the frame must be rigidly installed so that it is plumb and square. Prior to permanent anchoring, the frame must be shimmed and braced such that both jambs are completely vertical, straight and parallel to one another, and the head is horizontal and level. The sill on a four sided frame should also be horizontal and level. The installed frame should be in a flat vertical plane.

If a three-point lockset is installed on the door unit, it is even more essential that the frame and door panel be in exactly the same vertical plane or all three latch bolts will not engage the strikes in the frame properly.

The following steps are provided as a guide for proper installation of Deansteel joiner doors:

After uncrating the door assembly, inspect the door, frame and installed hardware for any damage. If any damage is found, do not proceed further; contact Deansteel immediately for instructions.

To proceed with door installation, check that the door(s) are properly closed and locked. Tilt the door unit into the opening, sill first. After completely pressing the unit into the opening, clamp or brace the unit in position. Then examine the “joint” between the frame and bulkhead for even contact around the perimeter of the frame. Any separations or gaps between the door frame and the bulkhead greater than 1/16” require the bulkhead to be either straightened or replaced in accordance with standard structural practices.

For separations between the door frame and bulkhead of up to 1/16”, manufacture shims of varying thickness using 1" wide flat bar. Clamp the door frame and shim(s) to the bulkhead. Ensure a flat mounting plane is achieved for the frame.

#### CAUTION

A major cause of door failure can be attributed to welding or bolting frames directly into warped bulkheads without shims, which can result in twisted frames and door panels not seating properly.

Use either a plumb bob or level to insure that both jambs of the frame are completely vertical. A level should be used to insure that the head (top) and sill (bottom) of the frame are horizontal. Inside width measurements from one jamb to the other should be taken at several points along the height of the jambs to further insure that they are parallel.

Deansteel recommends a simple "string" test to insure that the frame is in a single flat plane. Use tape to fix the ends of two strings at opposite top and bottom corners of the frame so that they cross diagonally near the center. If the frame is in plane, the strings will gently touch each other at the crossing point. If the strings don't touch, the frame is not flat by approximately the dimension of the gap between the strings. The frame position should be adjusted with shims until the strings just touch.

Then reverse the fore and aft string positions so that front string passes behind the other string instead of in front of it. Check the strings for contact again. If there is no gap, the frame is flat and in a single plane, but if there is a gap, leave the strings in place and adjust the frame with shims until the strings touch lightly in the center. It doesn't take long to quickly double-check the frame mounting with this simple string test.

#### Bolted Installation:

If the doors are to be mounted using bolts, the bolts should be ¼"-20 UNC hex head 316 stainless steel bolts with ¼" stainless steel flat and lock washers and ¼" stainless steel nuts. The length of the bolts should be determined by the combined thickness of the bulkhead, frame and shims. There should be 3 to 5 threads of the bolts extending beyond the nuts when the bolts are tightened.

Once a flat mounting plane is achieved, drill 9/32" holes in the bulkhead, to mount the door frame. Use the holes provided on the frame flange as a drilling template. Drill and attach the door frame on the hinge side by installing the fasteners in every other mounting hole. Drill and attach the door frame on the latch side by installing the fasteners in every other mounting hole. Drill and attach the door frame on the top and bottom sides by installing the fasteners in every other mounting hole.

Cycle the door from fully closed position to fully open position several times while checking for binding and rubbing. Check to ensure door panel sits flush to the frame with door in the closed position. If binding or rubbing is present, or if door panel does not sit flush with the frame in the closed position, check the frame to the bulkhead mounting surface and identify where shims need to be added or removed. Install or remove shims as required until no binding or rubbing is present when door is cycled from fully closed position to fully open position and door panel sits flush with the frame when the door is in the closed position.

Drill all remaining holes and finish attaching the door frame to the bulkhead. Fully tighten all of the mounting hardware. Cycle the door from fully closed position to fully open position several times while checking for binding and rubbing. Check to ensure door panel sits flush with door frame in the closed position.

Welded Installation:

If the doors are to be welded into the bulkhead, tack welds should be placed near the ends of both jambs and the head of the frame (and the sill and bulkhead of a four-sided frame) with additional tack welds at 24" pitch or less between the end tacks.

Cycle the door from fully closed position to fully open position several times while checking for binding and rubbing. Check to ensure door panel sits flush with door frame in the closed position. If binding or rubbing is present, or if door panel does not sit flush with door frame in the closed position, check the frame to the bulkhead mounting surface and identify where shims need to be added or removed. Remove welds if necessary to install or remove shims as required until no binding or rubbing is present when door is cycled from fully closed position to fully open position and door panel sits flush with the door frame in the closed position.

Once a flat mounting plane is achieved, finish welding the frame to the bulkhead using good welding practice. Care should be taken to avoid warping the frame due to excessive temperature rise from the welding operation. This precaution is particularly important if the frame is fabricated with stainless steel. If a continuous fillet weld is desired, be sure to apply the weld by connecting a number of staggered intermittent welds (~3" in length) that are applied in an alternating pattern around the perimeter of the frame.

After welding is completed, cycle the door from fully closed position to fully open position several times while checking for binding and rubbing. Check to ensure door panel sits flush with door frame in the closed position.

DOCUMENTATION

The installer should use the attached Door Inspection Form to document the completed door installation (Enclosure 1).

