

Overview: Installation instructions

These installation instructions are guidelines only. Applicable building codes, standards and accepted practices apply. The Authority Having Jurisdiction is the final authority in issues related to the installation and use of any building products. Typical installation details are supported by a video collaboration with the Steel Door Institute (SDI). See "Prep and Installation Videos" of [SDI Videos](#). Typical methods including constantly checking plumb, level and square, alignment and twist.



See also Frames in the [Steelcraft Tech data](#) & Price book

A. Choosing correct Series, JD, and Stud construction:

1. Series Matrix:

Selection Guide	
C (Installed with stud wall framing)	CK (Easy-install, Installed after finished wall)
Similar to F Series	Similar to K Series
No backbend profile	
Face anchor holes standard*	
Tabs in head, slots in jamb	
KD or Welded (intended for welded assemblies)	KD only
No compression anchors	Compression anchors only
Weld-in F anchors / Wood stud std / may omit	No weld-in anchors
Typical F Series base anchors / adjustable base std	CK base anchor (K Series type with no dimple)
Rated 90 min/must be welded & weld-in anchors	Rated up to 90 minutes
*5/32" pre-punched for #8 fine thread screws for steel studs or 10D-12D nails max for wood studs, not included	

2. Frame jamb depth: The frame jamb depth should be at least 1/8" greater than the total wall thickness (consider larger for 14ga). Nominal JD* measured to outside frame faces.

Frame profile jamb depth selection examples							
JD (wall thickness)	JD options (1/8" increments)***				wall calculation		
	+0.125	+0.25	+0.375	+0.5	Stud	+ Drywall thickness*	+ HM**
5" JD	5.125"	5.25"	5.375"	5.5"	3.625"	1.25" using (2) 5/8" sheets	0.125"
4-5/8" JD	4.75"	4.875"	5"	5.125"	2.5"	2" (for rated) using (4) 1/2" sheets	0.125"
5-1/8" JD	5.25"	5.375"	5.5"	5.625"	2.5"	2.5" (for rated) using (4) 5/8" sheets	0.125"
5-3/4" JD	5.875"	6"	6.125"	6.25"	3.625"	2" (for rated) using (4) 1/2" sheets	0.125"
6-1/4" JD	6.375"	6.5"	6.625"	6.75"	3.625"	2.5" (for rated) using (4) 5/8" sheets	0.125"

*No backbends so JD is the wall thickness + at least 1/8 for total frame thickness + any extra needed for imperfect wall construction or heavier gauge steel. 2 sheets of drywall for rated openings.

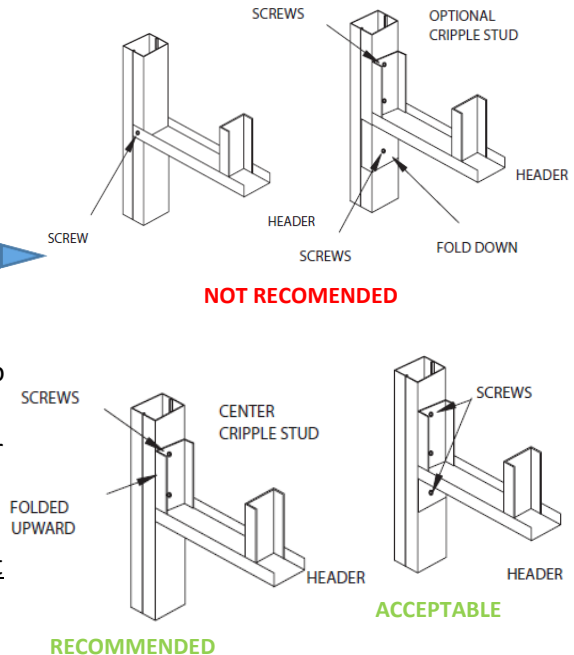
**16ga typical (if 14ga, consider 3/16" for max HM tolerance).

***Add 1/8" or more to total JD if wall is not perfect or other factors.

For 14ga frames consider adding 1/16" (total 3/16") for HM frame thickness based on worst case tolerances (use larger jamb depths at 1/8" increments for imperfect wall conditions/installation).

-- Variations in jamb depths available in 1/8" (3 mm) increments.

- Stud wall construction: It can be critical to consider steel stud construction assembly methods to maintain proper wall thickness 1/8" or more under your nominal frame depth. Reference ANSI/SDI A250.11 and NAAMM HMMA 840-07 Installation and Storage of Hollow Metal Doors and Frames. Note page 12 and images to right in HMMA 840-07 providing acceptable, as well as not recommended examples for steel stud construction. Methods of steel stud header connections using cripple studs to frame out the opening are recommended. Taller and wider openings should use cripple studs and/or boxed headers for additional support. Whatever method chosen, extreme caution should be taken to be certain that construction of stud walls will not increase the wall thickness.



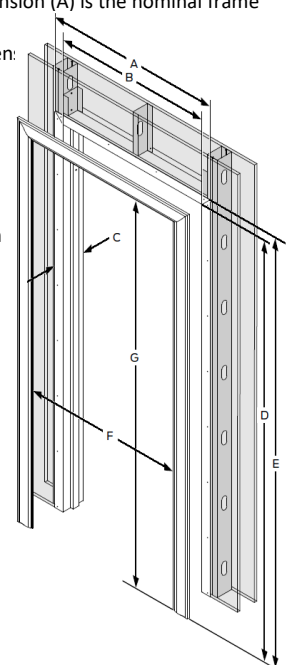
- If necessary, accepted manufacturer or industry practices should be followed such as removing just the necessary amount of drywall to avoid interference with, for example, stud connector screw heads and tracks which are thicker than studs. This will allow the drywall sheet to lay flat against the steel stud to maintain your expected wall thickness. If this cannot be done, there are specially designed heads such as Redheader and others from ClarkDietrich.
- Frame jamb depths greater than 1/8" more than the wall size (1/16" gap per side) can be used for an easier installation, but face will angle when the face attachment screws pull the faces in at the attachment holes. This is typically not noticeable once casing is added but must be planned. Checking for plumb, level and square, alignment and twist in the studs when framing out the opening is critical.
- If no precautions are made as noted above, the wall will typically be about 1/16-3/16" greater than expected in the jamb section, and 1/4"-3/8" greater than expected in the header (dimensions will vary depending upon gauge, stud/track manufacturer and screw heads).
- Notching/shaving drywall may be needed to avoid interference (e.g. for RA/TJ closers and for auxiliary hinges at top hinge if opening over 7'2").

Planning Wall Construction and Rough Opening Size
 - See next page (B) and See table in A.2 above "Frame profile jamb depth selection examples."

C Series frames: Are installed as part of the stud wall framing sequence. The studs (typically steel studs in commercial applications) are installed tight against the jambs.

CK Series frames: Are installed after the stud walls.

- (A) Rough opening width dimension (A) is the nominal frame opening width (B) plus 2"
- (E) Rough opening height dimension (E) is the nominal frame opening height (D) plus 1"
- (C) Jamb depth is at least 1/8" greater than wall thickness.
- (F) Wood trim casing inside dimension width and height (G) are approximately 1/4" less than the nominal opening width and 1/8" less than the nominal opening height resulting in about 1/8" distance to rabbets.



B. Examples and Guidelines – Typical wall construction, rough opening, opening size, and jamb depth:
 (See previous diagram and to right)

1. C (welded) Rough Opening, same as F-Series:
 Choose 1/8-1/4 greater than opening height and 1/4"-1/2" greater than opening width.
2. CK (KD) Rough Opening, same as DW/K drywall frame max:
 - a) Width: 2" less than the actual frame width, which is the nominal door opening plus 2". This will create a 1" frame face overlap with a 2" face frame. During install you can shift the frame to the hinge side to allow more room for latching hardware as needed. For fire rated frames, you must have at least 1/2" drywall entering the frame throat.
 - b) Height: 1" less than the actual frame height, which is the nominal door height plus 1". This will create a 1" frame face overlap with a 2" face frame.
3. 90 min rating is available. See last page of doc.

C. C-series Frames (typ welded): Frame installed as part of the stud wall framing sequence.

1. For less common welded frames, specify weld-in wood or steel stud anchors. Like F series, the wall will go up after the frame and steel studs moved into the frame throat against reinforcements before locking into steel tracks and frame reinforcements with proper screws.
2. Rated C-series frames (weld-in anchors / no compression anchors) must be welded.

D. CK-series Frames (KD): Wall built before Frame

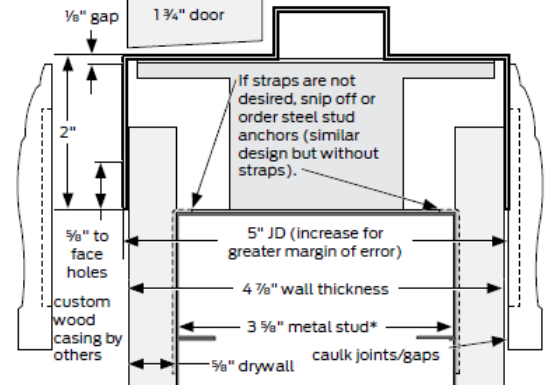
1. Similar to K Series, wall will go up before the frame. The wall will typically be finished and painted in this application. Note the example photos used were taken only as an installation example for this document. Installer preferences may vary with the same or different results. This particular example uses a 3-5/8", 25ga min stud with 2 sheets of 1/2" drywall per side to achieve a 90 min fire rating on a 5-5/8" wall using 5-3/4" JD frame.
2. Check wall construction for correct thickness around perimeter and check plumb, level, square, and twist before beginning installation.

Examples below use 3 5/8" steel studs with 5" JD and has no margin of error in wall construction – consider greater JD's such as 5 3/8" or larger (see Table in A.2 above)

C Series Welded Frame examples

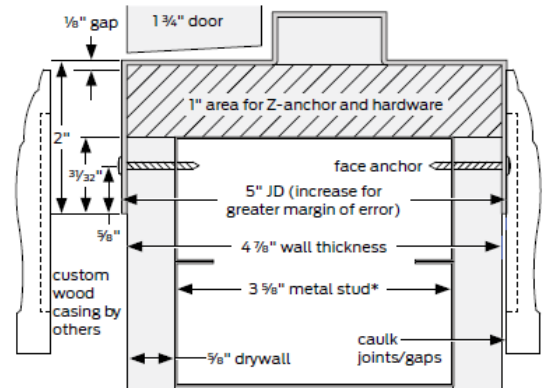
Using default wood stud anchors

- Steel stud anchors (without straps) may be specified in order



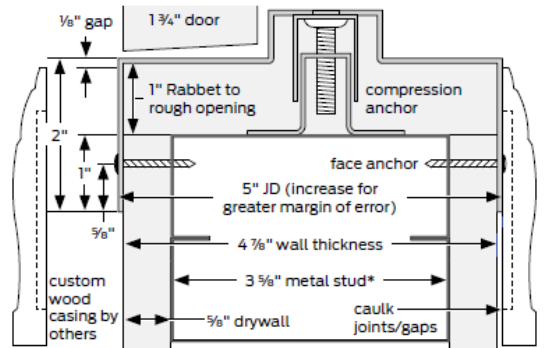
Using optional recessed steel stud Z-anchors

- This layout also applies for omitting jamb anchors (non-rated only).



CK Series knock down frame example

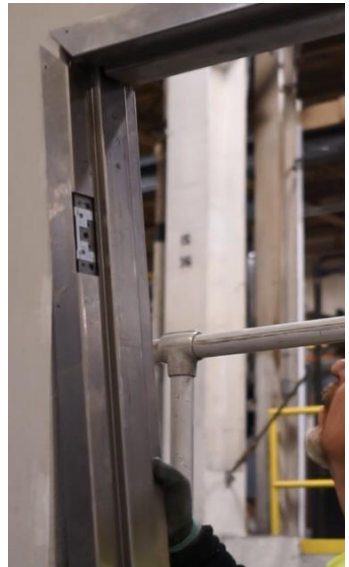
CK Series knock down frame with compression anchors



3. Slide header over the wall board. Typically, friction will hold the header in place. As a precaution, use wood stud ground supports or assistance to hold until supported by jambs.
4. Use hammer claw or similar to adjust position.
5. Insert hinge jamb at an angle to engage the tabs in the head. Push vertical. Follow with the same method for the strike jamb.
6. Tighten compression anchors to pull jambs into head (jamb slots must engage head tabs).
7. Alternate tightening the compression anchor with tapping using a wood block and rubber mallet / butt of hammer in order to get the frame into place against the header.



Use levels to check plumb, level, square, and twist, including proper placement to maintain spacing for hardware.



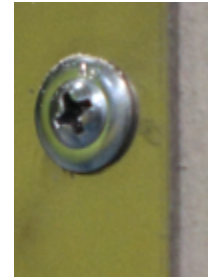
Place a wood spreader in place at the base of the frame and cut to the correct opening width in order to maintain the correct frame opening at the base of the frame.



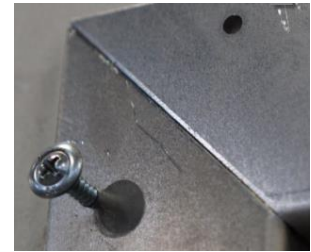
8. As you adjust, locate the frame to your specifications. For example, you might locate the frame closer to the hinge jamb if more room is needed for your latching hardware. If fire rated, be sure to maintain at least 1/2" overlap of frame face over drywall (NFPA80).



9. Once the frame is in position and secured plumb/level/square using metal shims and carefully tightened compression anchors, begin anchoring through face attachment holes starting at the bottom.



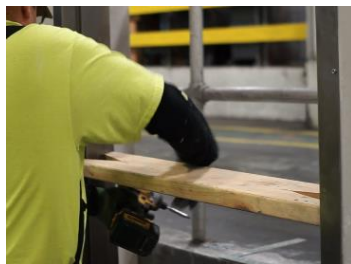
10. Use #8 Teks screws. Face holes are not countersunk, but trim with channels precut in backside of wood trim can be used. Otherwise, typical adhesive tape or caulk will take up a similar thickness as the screw head, with final edge gaps cleanly caulked.



- a) Options if casing must sit flat against frame
- Remove material on back of casing to form a cavity for the screw heads.
 - Use Fine threaded drywall screws and countersink (not too deep to keep from affecting frame structural integrity).
 - Use nails (wood studs only).

11. After attaching the bottom, check plumb, level, square, and twist while continuing to fine tune the compression anchor and frame position as you anchor the middle and then upper attachment holes.

Add a middle spreader as you move from one jamb to the other. Alternate, working both sides of the wall/frame.



- E. **Install Trim.** After secured, trim is installed using structural adhesive, tape, magnets, etc. If fire rated, rated caulks or tapes must be used, or nails/screws that do not penetrate the frame.
- F. **Fire rated openings (see price book and tech data)**
1. The C and CK Series frames can be rated up to 90 minutes. C series must be welded with weld-in anchors. They are listed for installations requiring compliance to both neutral pressure testing (ASTM E152 and UL 10B) and positive pressure standards (UL 10C). Refer to the Fire Rated Section of tech data manual for particular listings.
 2. C/CK must use double studs and 2 drywall sheets per side, each entering frame throat 1/2" minimum. C series only must be welded and use jamb anchors.
 3. Holes in frame face not covered by drywall must be filled using fire rated caulk, typically addressed during trim casing installation.
 4. Install trim casing using non-invasive methods (structural adhesive, tape, magnets). Use rated caulks under trim to seal any mechanical fastener or other holes. Acceptable tapes for rated applications are 3M's #969, #950, #444.



TIPS

Face anchor attachment options:

1. 1 5/8" Teks Screws (shown).
2. Countersink and use narrow threaded drywall screws.
3. If using wood studs, nails may be used (predrill studs).

Custom wood casing attachment options

1. Adhesive caulk or tape (rated openings must use rated caulks/tapes).
2. Screws (predrill or metal-piercing screws).
3. Nails if using wood studs (if using metal studs, you may back with caulk and use finish nail gun with appropriate technique).
4. Magnet style casing.

Options if your wood casing will not lie flat enough

1. Use cored out type casing.
2. Use caulk to hide gaps.
3. Countersink and use fine threaded drywall screws.
4. Remove material on back of casing at screw heads.
5. Notching/shaving drywall may be needed to avoid interference (e.g. for RA/TJ closers and for auxiliary hinges at top hinge if opening over 7'2")



(end of document)