

**Fig. 1**

For interior or exterior use on non-fire rated openings with metal frame and single or paired (double) metal or aluminum frame doors with or without reinforcement depending on the door weight. See note #7 below regarding wood door and/or frame installation. A gap of 5/16" (8 mm) gap is required between the door and the frame on the hinges side.

**Warranty Information**

The following actions will void any warranty, expressed or implied:

- Failure to install the hinge according to the supplied manufacturer's requirements and installation instructions
- Use of fasteners, other than those supplied
- Unauthorized field modifications.



For doors 1 3/4–2 1/4" (44.5–57 mm) thick, up to 48" (1210 mm) wide. Maximum door height is related to the length of the hinge - see Nominal Door Height chart below.

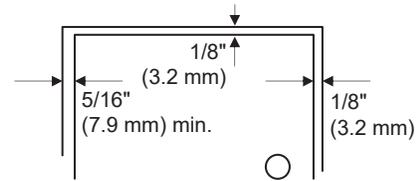
**Can be installed on doors 2–2 1/4" (50–57mm) only if maximum weight, width, and height are not exceeded.**

**Installation Requirements**

1. Hinges are supplied approximately 15/16" to 1" (24-25.4 mm) shorter than the nominal door height, to avoid threshold and carpet interference issues. (e.g. the actual height for a nominal 84" high door is 83-1/4", while the actual hinge height will be 83" to 83-1/16").
2. Door thickness must be minimum 1-3/4" (44 mm) with a gap of 5/16" (8 mm) between the door and the frame (on hinges side). Refer to Figure 1
3. The minimum frame depth must be 1-3/4" (44 mm).
4. Hollow metal doors and frame must have sufficient interior support, so that the hinge can firmly mounted without any deflection or movement.
5. Supplied hardware is for installation on metal doors and frames. If installation on wood frame or door is required, appropriate hardware will be required (not supplied)
6. Threaded mounting screws (# 12-24 x 5/8" long) require a minimum 3/32" (2.5 mm) metal thickness. The self-drilling and self-threading (TEK) screws should not be used to drill any mortar, cement or grout behind the door frame. Use the self-drilling TEK screws for drilling when material thickness is less than 0.110" (2.8 mm). For thicker material thickness, drill and tap for 12-24 UNC thread.

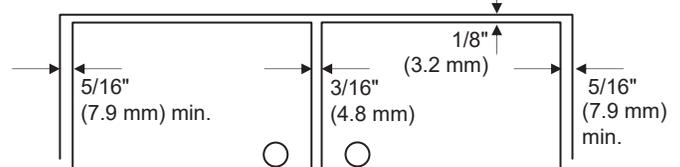
7. All drilled and tapped holes must be perpendicular to the mounting surface and in the center of the hole in the hinge. Check every installed screw and ensure that the screw is not pulling/pushing the hinge out of its free position.
8. For applications with door weight less than 200 lbs. (90 kg), in general, no hinge reinforcement is required.
9. For door weights more than 200 lbs. (90 kg) and up to 400 lbs. (182 kg) the door and frame must have a proper reinforcement.
10. The recommended clearances around the door(s) are indicated in the Figures 2 & 3.
11. The frame surface must be flat where the hinge is installed. The frame must be solidly attached to the wall structure, and it should not flex as the door operates. Any frame flexing will affect the hinge operation and create noise.
12. Frame must be flat and vertical at the full height within 1/16" (1.5 mm)
13. Geared hinges have self-lubricating bearings and normally do not need any lubrication.
14. Ensure the geared sections of the hinges and the plastic thrust bearings are clean of any foreign particles. Any dirt or metal filings will affect the hinge operation
15. Secure the gear-spine cover with two set screws located near the top and bottom edges. The screws are located on the plastic thrust bearing. Slight tightened the screws and ensure tightening does affect the hinge rotation/operation.

**Fig. 2: Single Door - Square Edged**



Hinge thickness	5/16" (7.9 mm)
Allowance for frame irregularities	1/32" (0.8 mm)
Latch side clearance (typical)	1/8" (3.2 mm)
<b>TOTAL*</b>	<b>15/32" (11.9 mm)</b>

**Fig. 3: Paired (Double) Doors - Square Edged**



First hinge thickness	5/16" (7.9 mm)
First allowance for frame irregularities	1/32" (0.8 mm)
Clearance between doors (typical)	3/16" (4.8 mm)
Second hinge thickness	5/16" (7.9 mm)
Second allowance for frame irregularities	1/32" (0.8 mm)
<b>TOTAL*</b>	<b>7/8" (22.2 mm)</b>

**Nominal Door Height**

Nominal Door Height	Nominal Hinge Length	Frame Fasteners	Door Fasteners
84" (2134 mm)	83" (2108 mm)	19	19
96" (2438 mm)	95" (2413 mm)	20	20
120" (3048 mm)	119" (3023 mm)	22	22

### Hinge Trimming (if required)

- If the hinge must be trimmed shorter, first determine the correct door handing and hinge orientation. Then, mark and trim only at the bottom of the hinge. DO NOT cut the top end.
- Using a metal-cutting saw begin the cut through the gear cover first. Obtain a clean and smooth cut. Deburr carefully and clean all sharp edges, before sliding any covers.
- Do not cut through any holes of the nylon thrust bearings in the gears. Relocate any bearing with a setscrew (if required).

### 1. Installation to the Frame

- Verify that the door fits in the door opening with the required clearance/gaps around the door as indicated in Figures 2 and 3. Verify that the frame jamb/rabbet is perfectly vertical. Do not try to install if door does not fit in the frame opening.
- Verify that hinge height is at least 1/8" (3 mm) shorter than the door height.
- With hinge open, place hinge frame leaf against the frame rabbet, making sure that the alignment rib is in full contact on the frame along its entire length, as shown in Figure 5.
- Position hinge on the door frame, using a 5/32" (4 mm) shim between the hinge top edge and the frame top jamb (refer to Figure 4).
- Hold hinge in place and use the supplied punching tool to mark the centers of the two top mounting holes. Secure using supplied self-drilling/tapping TEK screws. Ensure the drilling is perfectly perpendicular to the frame surface. Verify that the hinge is vertical and repeat this step at the bottom of the hinge on two lowest mounting holes. Install two more screws at the middle of the hinge after ensuring that the hinge is vertical and the door leaf hinge is operating normally. If an issue is noticed, repeat steps 1(c) to 1(e).
- If frame wall thickness is insufficient for the supplied machine screws, steel rive-nuts (not supplied) must be used.
- Install remaining screws, ensuring that all screw holes are centered in the hole on the hinge. If any screw hole is not centered, drill another hole close-by. Once the door is attached to the hinge, the door will follow the hinge motion.
- Verify that the hinge rotates freely and smoothly.
- Remove hinge for installation of the hinge on the door.

### 2. Installation to the Door

- Ensure door hinge-side edge skin is of appropriate thickness for the hinge mounting.
- With hinge open, place hinge door leaf against the door edge, making sure that the alignment rib is in full contact on the door edge along its entire length, as shown in Figure 5.
- Ensure top hinge edge is at least 1/32" (1 mm) lower than the door top edge and the hinge bottom edge is at least 1/32" (1 mm) above the door bottom edge.
- Hold hinge in place and use the supplied punching tool to mark the center of the top two mounting holes. Secure using supplied self-drilling/tapping TEK screws. Ensure the drilling is perfectly perpendicular to the door surface. Verify that the door is vertical and repeat this step at the bottom of the hinge on two lowest mounting holes. Install two more screws at the middle of the hinge after ensuring that the hinge alignment rib is firmly in contact with the door edge and the hinge is operating normally. If an issue is noticed, repeat steps 2(b) to 2(d).

### 3. Hanging the Door

- With hinge attached to the door, open hinge leaf 90° and attach the hinge frame leaf to the frame rabbet with supplied screws. Start with top, middle and bottom screws, install all screws loose until all screws are installed. Then tightened all screws while verifying that the door opens and closes without any friction or noise.
- Ensure all screw countersunk flat heads fit flush on the hinge and they do not prevent the door from being fully closed.

### 4. Verify Operation

- Verify that door opens and closes smoothly and tighten firmly all screws.
- Verify clearances around the door is sufficient for the door proper closing.
-  If excessive friction or noise is noticed, the frame and door must be checked again. Loosen all screws and check again. Remove one screw at a time and visually check if the threaded hole in the door or frame is centered with the hole on the hinge.

### 5. Door Adjustment

- If frame width opening is excessive, thin shims can be used behind the frame hinge leaf.
- Use cloth material 1-1/2" duct tape locally where needed in stepped layers, to build-up the required thickness. Ensure shims do not affect the hinge operational smoothness.
- To shift the entire door, a thin continuous aluminum strip can be used behind the frame leaf. Clearance holes must be drilled at the mounting screws location.

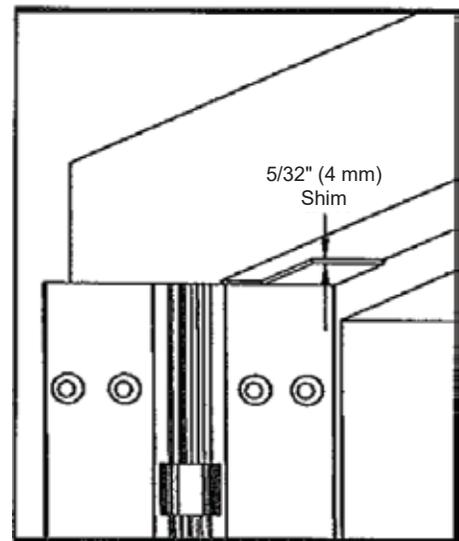


Fig. 4

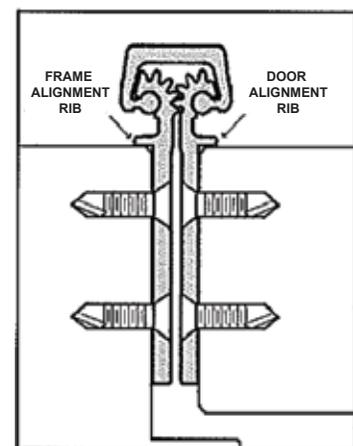


Fig. 5

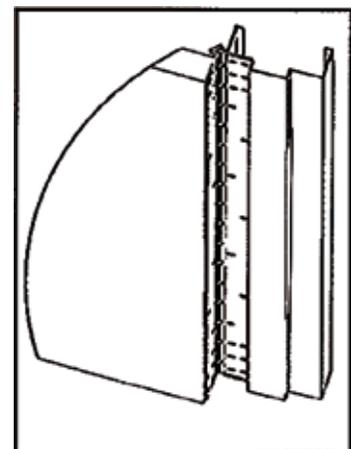


Fig. 6

