

# Installation & Maintenance Recommendations



The purpose of this handout is to give a general overview of the installation and maintenance recommended by the manufacturer. Information herein is only to serve as an aid in the installation and maintenance of these hinges. It is the responsibility of the installer to ensure all city, state, architectural, and/or national standards, specifications, and codes are met.

## Caution

- Read this hand out thoroughly before beginning installation
- Extra people or equipment should be used when lifting heavy doors
- Failure to install hinges properly could result in injury
- Proper safety equipment should be used during installation, including but not limited to eye protection and welding gear
- HardwareSource is not responsible for accidents and injuries resulting from the use or installation of our hinges

**Tools list:** The following is a general list of tools used to install hinges. Not all tools may be required for your installation.

Power Drill with assorted drills	Welder with welding wire	Screwdrivers	Tape measure	Level	Shims
Welding Safety Equipment	Laser	Clamps	Pencil	Square	Safety Glasses
Screws, bolts, or lag bolts	Grease gun or Oil can	Wrenches	Allen Wrenches	Grease or Oil	Plumb line

## Rules

A number of rules must be met when mounting hinged objects.

- 1) Prior to installation, frames & doors must be inspected and corrected for clearance, size, plumbness, alignment and twist.
  - Clearance is the amount of space between the door and frame, on all sides, as specified by the door manufacture or designer. *See supplement for Camlift hinges*
  - Tolerances shown below are only in one direction for clarity.

<p><b>Figure 1</b> Plumbness is a measurement from the top of the jamb to the bottom of the jamb. Tolerance not to exceed +/- 1/16".</p>	<p><b>Figure 2</b> Alignment is a measurement of the location of top jamb to bottom jamb. Tolerance not to exceed +/- 1/16"</p>	<p><b>Figure 3</b> Twist is the amount of bend in the jamb. Tolerance not to exceed +/- 1/16"</p>	<p><b>Figure 4</b> General Door Information</p>

- 2) Hinges must be installed without inducing "hinge bind". *See Hinge Bind*
- 3) A minimum of 2 hinges (1 pair) required per door
- 4) Door weight (thrust load) shall never exceed the thrust capacity of one hinge
- 5) Top hinge to be located 5" from top of door, bottom hinge to be located 10" from bottom of door, intermediate hinge, when used, to be centered between top and bottom hinge. (See figure 4)
- 6) The minimum threads engaged, when using screws or bolts, into reinforcing member shall be, at minimum, equal to bolt shank diameter
- 7) Weld fillets shall be of sufficient size and quality to insure safe door operation
- 8) When welding, temperatures at the knuckle shall not exceed 225°F

## Hinge Bind

Hinge bind is term used to describe the inability of the door to swing freely after installing hinges. Binding occurs because one or more of the hinges isn't in-line with other hinges. In a perfect installation one should be able to draw an imaginary line through the center of every pin (rotational point) that is straight up/down and parallel with the ground. (See Figure 6).

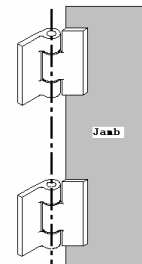


Figure 6

## Minimizing Hinge Bind

In order to minimize hinge bind use a straight edge, plumb line, laser or any other means along the round "knuckle" portion of the hinge in two planes that will insure that the hinges are mounted as close to in-line as possible. If possible, use a laser or level long enough to reach the round knuckle of both hinges to ensure hinges are mounted in-line to one another. This is critical when using more than two hinges. Please note that the plates are not necessarily parallel with the pin and therefore the round knuckle should be used for alignment purposes.

- See supplement for installing part numbers 654989 & 654999 adjustable hinges and Cam-Lift Hinges

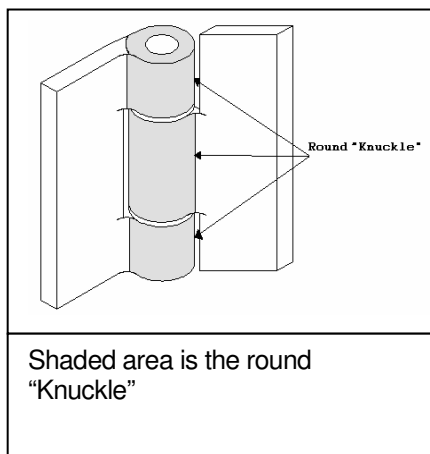


Figure 7

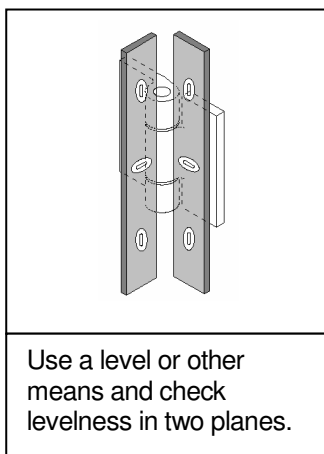


Figure 8

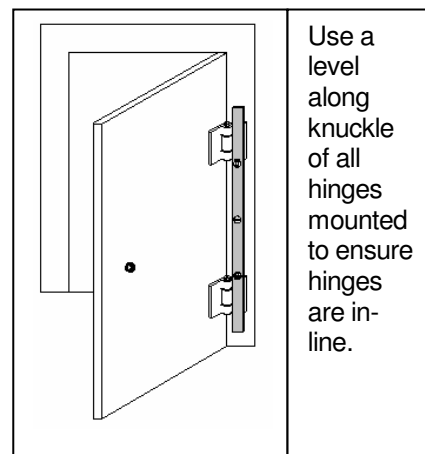


Figure 9

## Installing Hinges

- 1) Mount top jamb hinge first by tack welding or bolting in place, checking to ensure all items in rule no 1 are met and adjust or shim as necessary.
- 2) Mount bottom hinge on jamb next by tack welding or bolting, checking to ensure rule no. 1 is met and that top hinge is in-line with bottom hinge (see hinge bind section) adjust or shim as necessary.
- 3) Finish weld jamb hinges per rule 7 & 8 or torque bolts per fasteners specifications.
- 4) Prop door in place, checking rule number 1 is met in regards to the door and shim as necessary.
- 5) Tack weld top and bottom hinge sufficient enough to hold the door or tighten bolts and check for swing. If hinge bind occurs, remove tack or loose bolts and adjust as necessary.

## Maintenance:

Hinges are shipped with minimal lubrication and should be lubricated during installation. These hinges use either a hydraulic lube fitting (flush type or standard grease zerc) or oil fitting on our hinges depending on bearing configuration and hinge model. Some hinges are supplied with out lube fittings. We recommend using any general-purpose petroleum or synthetic based grease or oil for the temperature range and specific conditions your hinges will be exposed too. The purpose for lubrication is to minimize friction, protect bearings from corrosion, dissipate heat, and remove or prevent entry of foreign matter. The frequency of greasing depends on the severity of the surrounding atmosphere and frequency of use. Hinges used in high frequency, exterior, and/or harsh environments should be greased monthly. Moderate frequency & environments should be greased every quarter. Low frequency, interior, and non-harsh environments should be greased a minimum of every six-months.

Hinges should be checked at each lubrication interval for any signs of failure. Some signs would be cracks, excessive play or difficulty in rotating. Hinges should also be inspected if any abuse occurs. Abuse could be collisions by material handling equipment or doors being forced beyond their physical limits. Bolts should be checked for proper torque and welds should be checked for fatigue or cracks. Any and all signs of failure should be fixed immediately.