

TECH NOTE #6

4-BAR HINGES WITH ACETAL AND NYLON SHOES

To date, the Truth Hardware 4-Bar Hinge has enjoyed a very good track record however; several years of experience has shown that when improperly mounted, the hinge shoe can fail on rare occasions. Truth Hardware has identified the major cause of this failure as the mounting space between the sash and frame exceeding allowable tolerances. To overcome this excess space, the hinge must stretch to make up the space difference, at which point the hinge shoe is likely to fail. Under normal operating conditions, the hinge can tolerate a significant amount of stretch. Through our testing and field experience, Truth Hardware engineers have found that shoe failure almost always occurs when a window is in transit, not after the window is installed. In transit, the sash and frame can sometimes shift such that all the stretching will occur in one hinge. When the hinge is properly installed, there is very little space available for the sash to move inside of the frame. This virtually eliminates the possibility of shoe failure during normal shipping conditions.

The recommended stack height which should be allowed is as follows:

Standard Duty 4-Bar Hinge

Recommended: 17/32" (13.5mm)
Allowable Range: .520 (13.2mm) to .570 (14.5mm)

Heavy Duty 4-Bar Hinge

Recommended: 5/8" (15.9mm)
Allowable Range: .620 (15.7mm) to .670 (17.0mm)

Aluminum 4-Bar Hinge

Recommended: 3/4" (19.1mm)
Allowable Range: .750 (19.1mm) to .780 (19.8mm)

Heavy Duty Aluminum 4-Bar Hinge

Recommended: 5/8" (15.9mm)
Allowable Range: .625 (15.9mm) to .655 (16.7mm)

For the reasons discussed above, it is very critical that the stack height dimensions be respected. In some cases, it may be necessary to use shims. In casement applications, it may be desirable to use lifter blocks for these two purposes: first, they can assist the hinge by sharing any transit vibration and second, they can help to reduce or eliminate any sash sag problems.

Care should always be taken to square the window during installation. An out-of-square installation will contribute to the stress placed on the hinge.

