

WHY USE A SOCKET SCREW, INSTEAD OF LOW COST GRADE 2 OR GRADE 5 HEX HEAD?

On the surface, it may appear as though it is less expensive to purchase Grade 2 cap screws, than socket screws. Normally, when purchasing cap screws, you are buying holding power. The lowest cost fastener per pound of holding power is a socket screw. The graph below is based on relative cost data that should remain proportional regardless of the actual fastener cost. It can be seen that the socket screw has the lowest cost per pound of holding power.

Because a socket screw can hold more pounds per size, either fewer socket screws can be used or smaller size screws can be used. In either case, the cost of drilling and tapping is greatly reduced and the assembly size itself can be kept to a minimum. The actual total assembly cost is significantly lower.

It is also true that the manufacturing quality of a socket screw is far superior to a low-grade hex head. Socket screws have closer tolerance for better fit and radius root threads for greater reliability under dynamic loading.

Take, for example, a situation where 60,000 lbs. is the design load. This would require (4) 7/8 diameter Grade 2 hex heads, or (15) 3/8 diameter Grade 2 hex heads or (4) 3/8 diameter socket screws. Obviously, the structure would have to be much larger to accept the 7/8 diameter tapped holes. The cost of the larger drill and tap is approximately 7 times as much and the power to tap the hole is significantly higher. The socket screws provide the lowest cost, most reliable assembly.

