

Gear Mounting

There are several ways to mount a gear to a shaft. The method you choose will depend on your application. Berg supplies gears that will accommodate a variety of mounting methods. Our **Pin Hub** gears can be mounted in three ways:

1. We suggest using the set screw to secure the gear in the proper location and then using the spot drill to drill through the hub and shaft. Then the gear can be mounted with any one of a variety of pins (Berg carries a full line of pins.)
2. For light load applications you can rely solely on the set screw. This works best if the shaft is a relatively soft material so that the screw can form its own seat.
3. For precision applications a light press fit could be appropriate. This would insure good concentricity between the gear, shaft and indirectly, the bearings. You must take precaution not to damage the gear during the press procedure.

Formula for Press Fit

$$P_{\max} = \frac{e_{\max}E}{2d} \left(1 - \left(\frac{d}{D}\right)^2\right) \quad P_{\max} = \frac{e_{\min}E}{2d} \left(1 - \left(\frac{d}{D}\right)^2\right)$$

$$T = 1/2 \quad f P_{\min} l d^2$$

P = unit pressure of Max. or Min. interfering surfaces (psi)

T = Torque required to slip (in lbs.)

e = Max. or Min. Interference (in.)

E = Modulus of elasticity of the softer material (psi) See Table C (Page K5)

d = Shaft diameter (in.)

D = Hub Diameter (in.)

f = Coefficient of static friction (approximately 0.1 - 0.15)

l = Length of fit (in.)

(Machine Elements In Mechanical Design by Robert L. Mott)

It is important to keep the maximum interfering pressure less than the yield strength in order for these formulae to remain valid. A good rule of thumb is for each 1" of diameter the interfering distance (e) should be about .001". This number tends to get smaller as d gets larger. (Example: for 3" diameter, use an allowance of approximately .0025".)

Our **Clamp Hub Gears** allow you to securely mount a gear with the ability to reposition it as required. Consult pages J12-J15 to determine which clamp of our large variety will work best with your gear selection.