

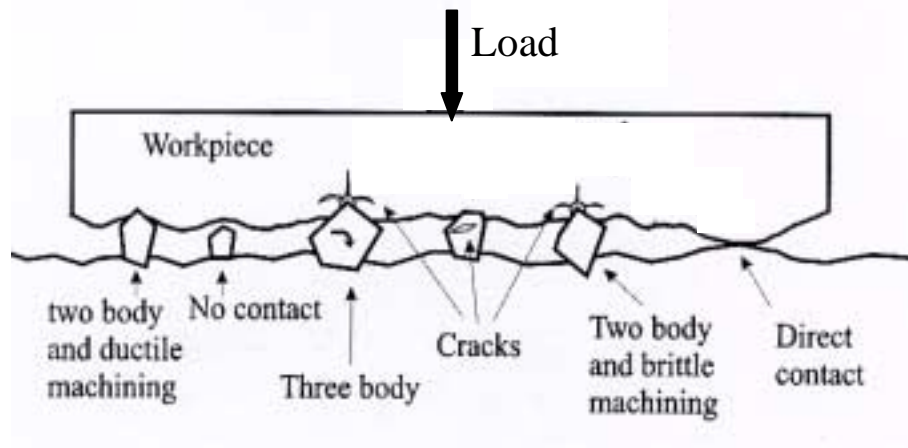
The Polishing Process

Polishing is one of the oldest processing methods, first used on the making of stone implements. Polishing is one finishing loose abrasive process, used to generate surfaces with very high tolerances in geometry, surface integrity, and roughness characteristics. It is still one of the most important finishing methods. Polishing particles remove small elements of a surface and make them smooth. This smoothness is obtained by rubbing the surface with the polishing particles with a rotating disk. Polishing is the best method today to obtain the finest surface. High accuracy and ultra-precision technology are indispensable ingredients for polishing today.

Polishing uses a larger number of multi point or random cutting edges for effective material removal. Abrasive finishing processes are accepted in a wide range of material applications and industries. Typical examples are finishing of various components used in aerospace, automotive, mechanical seals, fluid handling, and many others precision engineering industries.

Polishing is a final process that usually follows lapping to give the final surface characteristics of size, surface roughness, and flatness required for the parts. Polishing is used in many materials from steels to composite ceramics. It does not create a good planarization of the parts which should be done in lapping prior to polishing, since it corrects flatness in low discrepancies not in a big scale.

Polishing is primarily considered to have mostly three-body abrasive mechanisms. This is due to the fact that it uses grains that remain loose and can roll and slide in the pad. Although some abrasive grains embed into the polishing pad leading to two-body abrasion. Figure 1 shows these mechanisms in detail.



Lapping plate

Figure 1 Two-body and three-body abrasion mechanisms in polishing