



Keywords: Golden Gate™, Anvils, Sapphire, Torque Wrench

Pressure Limits of a Diamond Golden Gate™ ATR Accessory

For solid samples on a Golden Gate™, an external force from an applied load is needed to bring the sample into good contact with the diamond crystal. The load that can be applied as standard from the torque screw mechanism is approximately 80lbs. (This equates to a torque force of about 50cNm as given from the set torque mechanism). Using the torque wrench with Torx head adapter piece P/N GS10509, (not supplied with a Golden Gate™) the central Torx screw of the torque screw mechanism can be subjected to different torque settings ranging from 20cNm to 100cNm. Consequently the load can vary from 32lbs to 160lbs.

The load is transferred to a sapphire tipped anvil with a pressing face area of 8.04 square millimetres. Expressed as pounds per square inch (psi) a maximum load of 160lbs is applying a force of 12859 psi (875 bar) through the face of the sapphire anvil against a sample and to the diamond. At the standard 80lbs load from the set torque mechanism the pressure is 6430 psi (437 bar).

If a liquid is to be passed over the diamond in the Golden Gate™ ATR accessory there is a micro flow through anvil P/N GS10568 available to use. The pressure rating for a liquid inside this anvil when clamped down against the diamond crystal is up to 1000psi (68 bar).