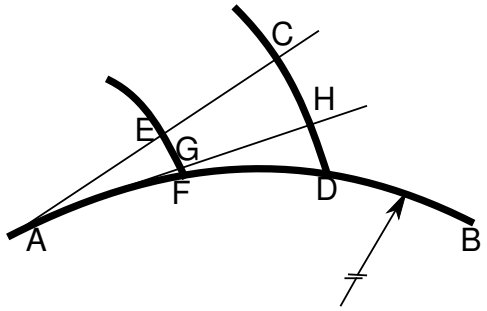
Procedure for measuring Base Pitch on Profile Projector

Principle:

The base pitch is the circular pitch of the teeth measured on the base circle. See figure. If AB represents a portion of a gear base circle, and if CD and EF the sides of two teeth then the length FD is the base pitch. But, from the property of the involute, if any two lines such as EC and GH are drawn tangential to the base circle to cut the involutes as shown, then: EC = GH = FD. This distance can be measured on the profile projector. If m is the module of the gear and ψ the pressure angle, Base pitch = $\pi * m * \cos \psi$



Procedure:

Rotate the ground glass screen, such that the screen protractor reads zero, to ensure alignment of the micrometer heads with the cross lines (perpendicular lines) on the ground glass screen.

Switch on the profile projector in Bottom Lighting mode.

Keep the gear on the measuring table and adjust (micrometers and protractor on the measuring table may be used) such that the screen cross line is tangential to the gear profile on any tooth.

Take the reading on the micrometer, which is to be moved perpendicular to the profile. This is the initial reading.

Rotate the micrometer till the same cross line is tangential to the next gear tooth. (If this is not possible, then the initial reading may have to be taken again.) Do not disturb the other micrometer or the table protractor or the screen protractor.

Take the final reading of the moved micrometer.

The difference between the initial and final reading is equal to the **base pitch**.