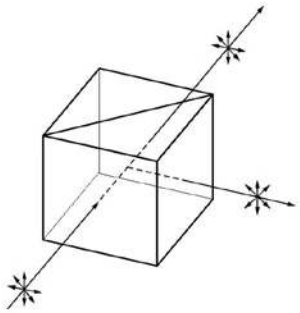
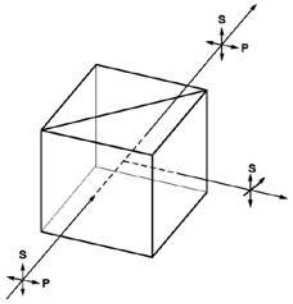
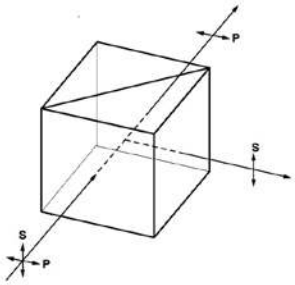
Beamsplitter Nomenclature

Artifex Engineering

Beamsplitters are available in various forms such as plates, cubes and penta prisms.

Furthermore, there are three different functional types. These are denoted „unpolarized“, „non-polarizing“ and „polarizing“, depending on the functional handling of the polarization of the light to be split.

Unpolarized	**Non-Polarizing**	**Polarizing**
		
Useful for natural, incoherent or unpolarized light. It is advised not to use these cubes in polarized optical systems. For proper functioning, the incoming light should be one of the following: – natural light – circularly polarized – 45° linearly polarized This means that the s-polarized and p-polarized components should be roughly equal to each other in intensity. The outgoing beams are two partially polarized beams of approximately equal intensities.	These beamsplitters have minimal polarization sensitivity. Therefore they may be used in polarized optical systems. Due to the metallic component of the hybrid coating, these beamsplitters are not intended for use with high power lasers since they show some absorption – typically about 8%. Non-polarizing beamsplitters are less sensitive to changes in angle of incidence than pure dielectric unpolarized beamsplitters.	These beamsplitters separate the “s” and “p” polarization components of a light beam. These two polarization components are reflected (“s”) and transmitted (“p”) respectively. Thus, both components are well separated (90°) and available for further use. When non-polarized light is normally incident upon the entrance face, it is separated into two polarized beams, emerging through two adjacent faces in perpendicular directions and polarized orthogonally to each other. When linearly polarized light is incident, it is similarly divided into two beams in a ratio depending upon the orientation of the polarization of the incident light beam.
Range of splitting ratios: 10/90 (R/T) to 90/10 (R/T) with T=(Ts+Tp)/2, R=(Rs+Rp)/2	Range of splitting ratios: 50/50 (R/T) with |Ts-Tp|<5-15%; |Rs-Rp|<5-15% dependant on bandwidth	Range of splitting ratios: Typically Tp:Ts > 1000:1

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