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Question:

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Answer:

(i) efficiency of screw $\eta = \tan \alpha / \tan(\alpha + \phi)$ And for self locking screws, $\phi \ge \alpha$ or $\alpha \le \phi$ Efficiency $\le \tan(\phi) / \tan(\phi + \phi) \le \tan \phi / \tan 2$ $\phi \le \tan \phi / (2 \tan \phi / (1 - \tan 2 \phi)) \le \tan \phi X (1 - \tan 2 \phi) / (2 \tan \phi) \le \frac{1}{2} - \tan 2 \phi / 2$ From this expression efficiency of self locking screw is less than 50%