

# PIN ECONOMICS

Every application is individual, but we offer the following information as a guide to how to choose the most suitable pin.

## TECHNICAL REQUIREMENTS

The pin must perform its required function. Economic factors only come into play in choosing between one or another type of pin that meets the technical needs of the application. Typical considerations are: -

- Where the maximum possible resistance to static shear loads is required a through hardened solid steel dowel has the most strength, but if space permits a larger diameter of other types of pin can be considered. A small increase in the diameter of the pin makes a large difference to the strength.
- Where the maximum possible resistance to vibration is needed, avoid spring pins and use either grooved pins to DIN 1473 (full length parallel grooves) or a hardened dowel fitted to the tightest possible tolerances.
- For resistance to corrosion, stainless is preferred to zinc or other plated finishes, except where the problem is galvanic corrosion between the pin and the components into which the pin is to be inserted. Plated finishes offer limited resistance to atmospheric, marine or chemical corrosion as the plated surface is liable to damage during insertion and in the case of spring pins and cotter pins the inside surfaces are not fully protected.
- For most commercial purposes, A2 grades of austenitic stainless (303, 304, etc) are sufficient to give good protection and are commercially available in most types of pin. For marine or chemical resistance, A4 grades such as 316 are essential, but this limits the choice of pin as A4 is not readily available in all types of pin.
- The shear strength of austenitic stainless is lower than that of hardened steel so if the application requires both corrosion resistance and high strength a larger diameter may be needed.
- For hinge applications where the pin will be subject to friction from rotation avoid slotted spring pins as the open slot can cause wear.
- For applications where the pin will require regular removal for purposes of repair or adjustment, consider extractable dowels (DIN 7979) or extractable taper pins (DIN 7977 or 7978).
- For safety-critical applications, avoid any form of electrolytic plating as the process to remove hydrogen embrittlement resulting from such plating is not fully reliable.
- Where considerations of hygiene are important, such as with food processing equipment, solid pins (dowels, grooved or taper) are preferred as dirt retention is avoided.