

SELECTED ISO FITS—HOLE BASIS

Extracted from BS 4500

The ISO system provides a great many hole and shaft tolerances so as to cater for a very wide range of conditions. However, experience shows that the majority of fit conditions required for normal engineering products can be provided by a quite limited selection of tolerances.

The following selected hole and shaft tolerances have been found to be commonly applied:

Selected hole tolerances: H7; H8; H9; H11

Selected shaft tolerances: c11; d10; e9; f7; g6; h6; k6; n6; p6; s6

The table in this data sheet shows a range of fits derived from these selected hole and shaft tolerances. As will be seen, it covers fits from loose clearance to heavy interference and it may therefore be found to be suitable for most normal requirements. Many users may in fact find that their needs are met by a further selection within this selected range.

It should be noted, however, that this table is offered only as an example of how a restricted selection of fits can be made. It is clearly impossible to recommend selections of fits which are appropriate to all sections of industry, but it must be emphasized that a user who decides upon a selected range will always enjoy the economic advantages this conveys. Once he has installed the necessary tooling and gauging facilities, he can combine his selected hole and shaft tolerances in different ways without any additional investment in tools and equipment.

For example, if it is assumed that the range of fits shown in the table has been adopted but that, for a particular application the fit H8-f7 is appropriate but provides rather too much variation, the hole tolerance H7 could equally well be associated with the shaft f7 and may provide exactly what is required without necessitating any additional tooling.

For most general applications it is usual to recommend hole basis fits as, except in the realm of very large sizes where the effects of temperature play a large part, it is usually considered easier to manufacture and measure the male member of a fit and it is thus desirable to be able to allocate the larger part of the tolerance available to the hole and adjust the shaft to suit.

In some circumstances, however, it may in fact be preferable to employ a shaft-basis. For example, in the case of driving shafts where a single shaft may have to accommodate a variety of accessories such as couplings, bearings, collars, etc., it is preferable to maintain a constant diameter for the permanent member, which is the shaft, and vary the bore of the accessories. For use in applications of this kind, a selection of shaft basis fits is provided in data sheet 4500B.

BRITISH STANDARD SELECTED ISO FITS—HOLE BASIS

Data Sheet
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Diagram to scale for 25 mm. diameter	Clearance fits						Transition fits				Interference fits				 Holes
	 H11	 H9	 H9	 H8	 H7	 H7	 H7	 k6	 H7	 n6	 H7	 p6	 H7	 a6	
+	 H11	 H9	 H9	 H8	 H7	 H7	 H7	 H7	 H7	 H7	 H7	 H7	 H7	 H7	
0	 H11	 H9	 H9	 H8	 H7	 H7	 H7	 H7	 H7	 H7	 H7	 H7	 H7	 H7	
-	 H11	 H9	 H9	 H8	 H7	 H7	 H7	 H7	 H7	 H7	 H7	 H7	 H7	 H7	
	 H11	 H9	 H9	 H8	 H7	 H7	 H7	 H7	 H7	 H7	 H7	 H7	 H7	 H7	
	 H11	 H9	 H9	 H8	 H7	 H7	 H7	 H7	 H7	 H7	 H7	 H7	 H7	 H7	
	 H11	 H9	 H9	 H8	 H7	 H7	 H7	 H7	 H7	 H7	 H7	 H7	 H7	 H7	
	 H11	 H9	 H9	 H8	 H7	 H7	 H7	 H7	 H7	 H7	 H7	 H7	 H7	 H7	
	 H11	 H9	 H9	 H8	 H7	 H7	 H7	 H7	 H7	 H7	 H7	 H7	 H7	 H7	
	 H11	 H9	 H9	 H8	 H7	 H7	 H7	 H7	 H7	 H7	 H7	 H7	 H7	 H7	
	 H11	 H9	 H9	 H8	 H7	 H7	 H7	 H7	 H7	 H7	 H7	 H7	 H7	 H7	
	 H11	 H9	 H9	 H8	 H7	 H7	 H7	 H7	 H7	 H7	 H7	 H7	 H7	 H7	
	 H11	 H9	 H9	 H8	 H7	 H7	 H7	 H7	 H7	 H7	 H7	 H7	 H7	 H7	
	 H11	 H9	 H9	 H8	 H7	 H7	 H7	 H7	 H7	 H7	 H7	 H7	 H7	 H7	
	 H11	 H9	 H9	 H8	 H7	 H7	 H7	 H7	 H7	 H7	 H7	 H7	 H7	 H7	
	 H11	 H9	 H9	 H8	 H7	 H7	 H7	 H7	 H7	 H7	 H7	 H7	 H7	 H7	
	 H11	 H9	 H9	 H8	 H7	 H7	 H7	 H7	 H7	 H7	 H7	 H7	 H7	 H7	
	 H11	 H9	 H9	 H8	 H7	 H7	 H7	 H7	 H7	 H7	 H7	 H7	 H7	 H7	
	 H11	 H9	 H9	 H8	 H7	 H7	 H7	 H7	 H7	 H7	 H7	 H7	 H7	 H7	
	 H11	 H9	 H9	 H8	 H7	 H7	 H7	 H7	 H7	 H7	 H7	 H7	 H7	 H7	
	 H11	 H9	 H9	 H8	 H7	 H7	 H7	 H7	 H7	 H7	 H7	 H7	 H7	 H7	
	 H11	 H9	 H9	 H8	 H7	 H7	 H7	 H7	 H7	 H7	 H7	 H7	 H7	 H7	
	 H11	 H9													