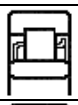
20.2 Selection of rolling bearings

SELECTION OF TYPE OF BEARING REQUIRED

Table 20.1 Guide for general application

Design of bearing	*Bearing bore*	*Sealed* (Se) *or shielded* (S)	*Load capacity*		*Allowable misalignment (degrees)* [4]	*Coefficient of Friction*[5]	*Bearing section*
			Radial	*Axial*			
Single row deep groove ball	Cylindrical	1 or 2 Se 1 or 2 S	Light and medium	Light and medium	0.01 to 0.05	0.0015	
Self-aligning double row ball	Cylindrical or tapered	2 S	Light and medium	Light	2 to 3	0.0010	
Angular contact single row ball	Cylindrical	--	Medium [1]	Medium and heavy	--	0.0020	
Angular contact double row ball	Cylindrical	--	Medium	Medium	--	0.0024	
Duplex	Cylindrical	--	Light [2]	Medium	--	0.0022	
Cylindrical roller single row	Cylindrical	--	Heavy	--[3]	0.03 to 0.10	0.0011	
Cylindrical roller, double row	Cylindrical	--	Heavy	--	--	0.0011	
Needle roller single row	Cylindrical	--	Heavy	--	--	0.0025	
Tapered roller single row	Cylindrical	--	Heavy [1]	Medium and heavy	--	0.0018	
Spherical roller double row	Cylindrical or tapered	--	Very heavy	Light and medium	1.5 to 3.0	0.0018	
Thrust ball single row	Cylindrical	--	--	Light and medium	--	0.0013	
Angular contact thrust ball double row	Cylindrical	--	--	Medium	--	0.0013	
Spherical roller thrust	Cylindrical	--	Not exceed 55% of simultaneously acting axial load	Heavy	1.5 to 3.0	Refer to manufacturer	

Information given in this chart is for general guidance only.

(1) Must have simultaneously acting axial load or be mounted against opposed bearing.

(2) Must carry predominant axial load.

(3) Cylindrical roller bearings with flanges on inner and outer rings can carry axial loads providing the lubrication is adequate.

(4) The degree of misalignment permitted is dependent on internal design and manufacturers should be consulted.

(5) The friction coefficients given in this table are approximate and will enable estimates to be made of friction torque in different types of bearings.

Friction torque = μ P d/2. $\times 10^{-3}$ Nm

Where P = bearing load, N

d = bearing bore diameter, mm

μ = friction coefficient.