BALLSCREW SELECTION

BALLSCREW SELECTION GUIDE:

The following steps(and considerations) will assist in selecting the JENA-TEC ballscrew to suit your specific requirements.

1. The screw should preferably be loaded in tension.

2. In the case of compressive loading; establish the minimum screw diameter necessary to resist buckling.

3. Determine the minimum diameter and lead necessary for the assembly to work below Critical Speed.

4. Establish the Load/Life required. For most applications Life Expectancy is considered as:

$0.25 \cdot 10^6$ metres of travel.

5. Dynamic capacity is based on a 90% probability of achieving a life of 1 million revs. under this loading.

$$\text{Dynamic Capacity Required} = \text{Actual load} \cdot \left(\frac{\text{Required Life}}{10^6}\right)^{1/3}$$

6. By taking the larger of the diameters given by calculations 2 and 3 above, determine the minimum PCD. of the screw required.

7. Check installation for radial or non-axial loading as these can seriously affect life expectancy.

8. Determine lead accuracy necessary for application.

9. Determine if backlash is permissible. Where loading is mono-directional or positioning accuracy is unimportant backlash may not be detrimental. Backlash can be reduced, or eliminated, if required.

10. Preloading of the nut/nuts may be required to increase the rigidity of the ball zone.

11. Ballscrew assemblies can be manufactured in Stainless Steels. However, load carrying capacities can be seriously reduced.

12. It is recommended that ballscrew assemblies are totally enclosed. Where this is impractical, wiper seals can be fitted at both ends of the nut. This may increase the nut length and reduce the operating stroke.

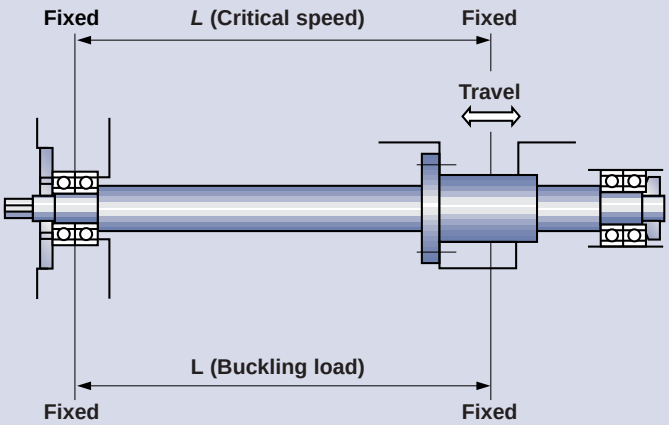
13. Ballscrew assemblies are high efficiency and not self locking; consequently a locking device, brake or worm gear may be necessary to sustain the load.

14. Lubrication with a good quality oil or grease should be maintained on the balltrack

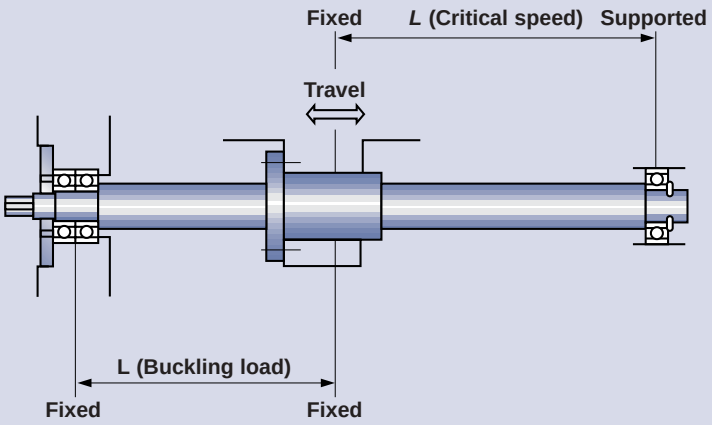
MOUNTING METHODS

Critical speed and column buckling load are dependent on the mounting method and unsupported length of the shaft. The most common mounting methods are shown opposite. The critical speed can be determined from fig 8. and the buckling load from fig 9. by reading the scales which correspond to the mounting method used.

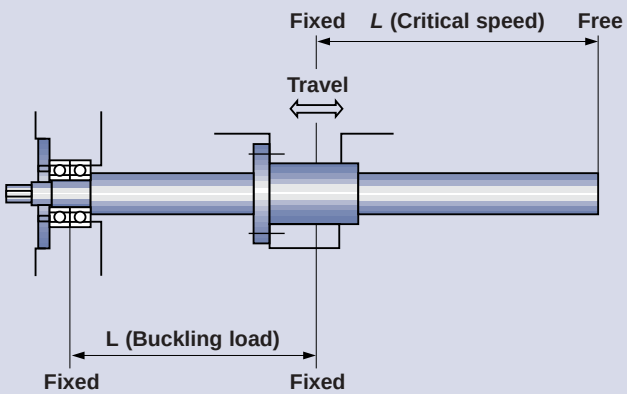
Buckling load: Fixed - Fixed **scale C**
Critical speed: Fixed - Fixed **scale G**



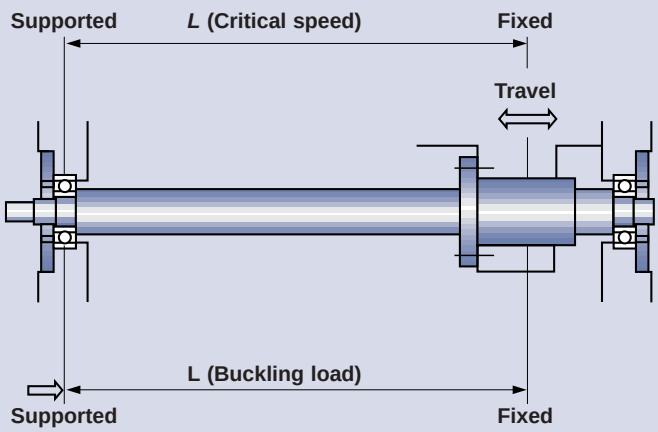
Buckling load: Fixed - Fixed **scale C**
Critical speed: Fixed - Supported **scale F**



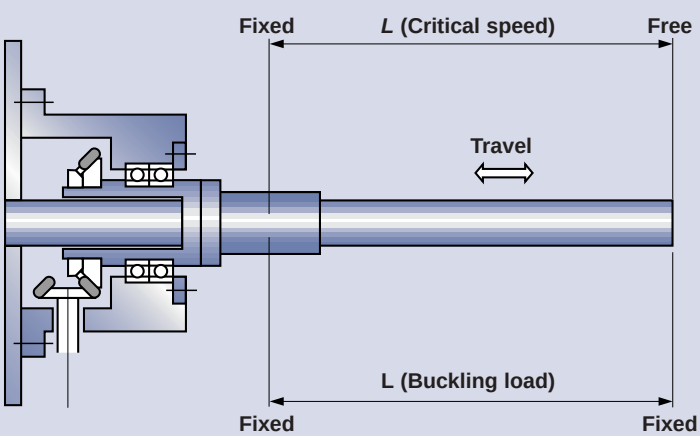
Buckling load: Fixed - Fixed **scale C**
Critical speed: Fixed - Free **scale H**



Buckling load: Fixed - Supported **scale B**
Critical speed: Fixed - Supported **scale F**



Buckling load: Fixed - Free **scale D**
Critical speed: Fixed - Free **scale H**



Buckling load: Supported - Supported **scale A**
Critical speed: Fixed - Free **scale H**

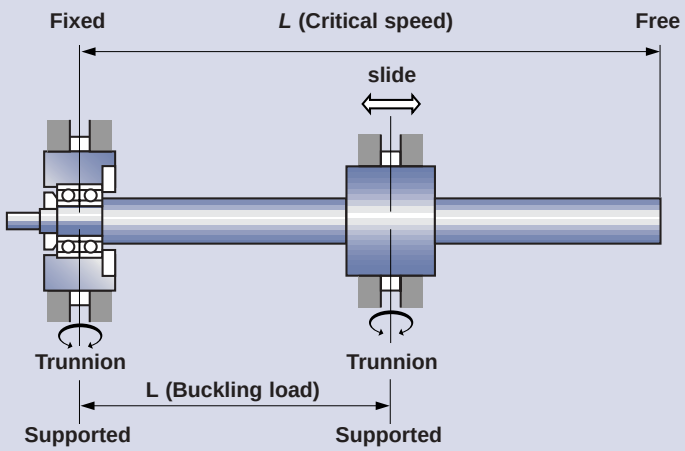


Fig. 7