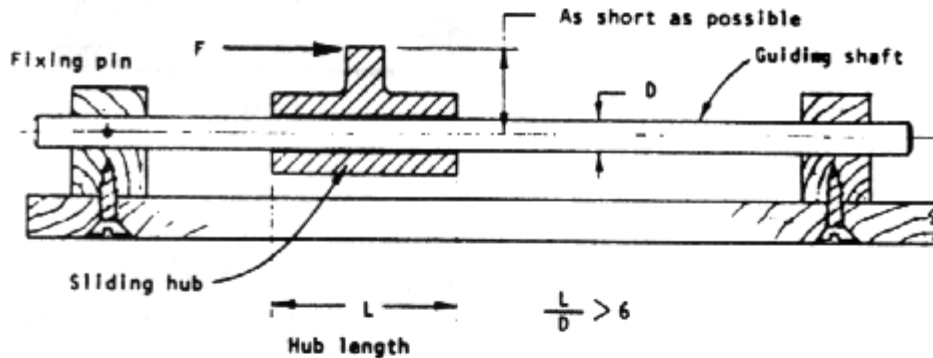


2.007 Cookbook: Sliding Bearings & Surfaces

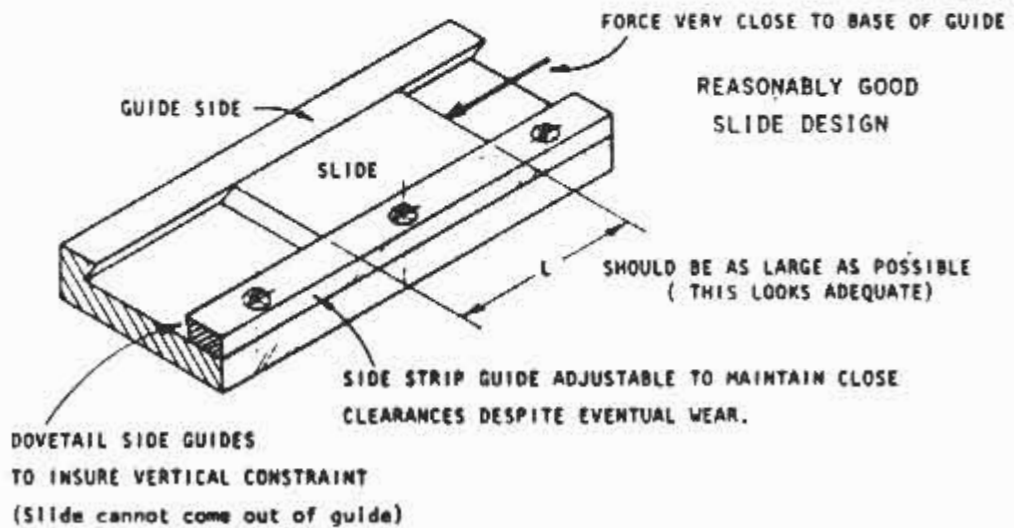
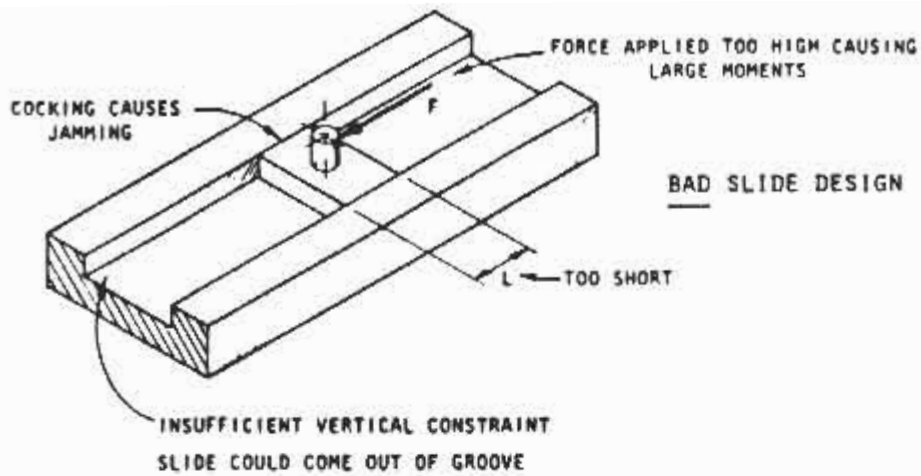
SLIDING MOTION

Among all the mechanical motions this is the trickiest and most potentially unreliable. It should not be attempted without adequate materials and fabrication techniques. Guided sliding members tend to cock and jam. Wear causes the situation to become increasingly worse. Guiding members should be very smooth, hard, and preferably even size cylindrical shafts. Sliding hubs should have closely fitting bores with just enough clearance for lubrication (.001" per inch of shaft diameter). Materials should be steel for shafts, and either steel or hard brass for the bores. NEVER USE ALUMINUM OR WOOD for sliding members. Both materials cause stick-slip performance and frequently tend to jam, wear badly, and seize easily.



For lubrication use dry lubricants such as graphite. Soft pencil lead ground and smeared over the shafts is advisable for prototypes (could be somewhat messy) but effective! Whenever possible, straight linear motions should be controlled through multiple simultaneous driving at critical points to maintain alignment and prevent cocking.

The difficulties of insuring reliable sliding motions can never be emphasized enough. The failure of most mechanical functions can often be traced to sliding linear members.



THERE ARE NO HARD AND FAST RULES FOR THE DESIGN OF SLIDES SUCH AS THE ONE SHOWN ABOVE. MATERIALS, LUBRICATION, MAINTENANCE, ETC. CAN AFFECT THE PROPORTIONS IN ANY GIVEN DESIGN. IN GENERAL, THE LONGER THE SLIDE THE BETTER.