

WELCOME

LaserAlignment.Net

## ***Laser Tip of the Month - June 2003***



Norm Voelzow

### **#1. Spacer Shaft vs. Short Flex Tolerances**

**Question:** From Eddie Waddell & D. C. Hames down in Georgia: "According to the alignment tolerance card, the maximum allowable tolerance is greater for a spacer shaft than it is for a short-flex coupling. Why is this?"

**Answer:** Basically the reason we have greater tolerance (per inch) on Spacer Shafts than Short Coupled applications is that there are two flex points (couplings). Not everyone catches it but on Spacer Shaft Tolerances we are actually controlling the angularity! Remember that the Gap angle on Short Flex couplings is the same as the angle between the Stationery & MTBM (Motor) centerlines!? On a short Flex the maximum gap (excellent) at 1,800 rpm is 3.0 mils (.003") at 10" or 0.3 mils per inch. The spacer shaft tolerance for 1,800 rpm is 0.6 mils per inch! Neat huh!

**Note #1: Extension Spacers.** If the spacer is just an extension with a flex (coupling) on one end and is rigid (no flex) on the other, we use the Short Flex tolerances at the flex coupling center only! To use Spacer Shaft Tolerances we must have two coupling flex points!

**Note #2: Very Short Spacer Shafts.** When you can't decide what constitutes a Spacer Shaft vs. a Short Coupled — a good rule of thumb is: If the spacers length exceeds the couplings largest diameter - use Spacer Shaft tolerances, If the spacers couplings largest diameter - exceeds the Spacer length use Short Flex tolerances. It sounds kind of simple but it is a very good rule!

**Note #3: Universal joint shafts.** Important! Universal joint shafts must have some misalignment (Parallel Offset) in order for the U-Joints (cross & caps) to lubricate! A perfect alignment will fail the U-Joints quicker than people will pick up money spilled by a Brinks truck on I-285! Well maybe not quicker but close!

I've faxed a "Spacer Shaft Tolerance Example" sheet and a sheet called "Spacer Shaft Tolerances" which I made for the Optalign®. I plan to have a complete explanation on our (Voelzow & Company) web site when we open it up!

Have a Great Day!

Norm Voelzow • Voelzow & Company, Inc,

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**Thanks - Norm**

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