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Measuring Coupling Backlash with your Laser Shaft Alignment System

This procedure is ONLY possible with laser shaft alignment systems that have a linearized bi-axial (or multi-axial) sensor. This will not be possible with laser systems that have single axis (Y-Axis only) sensors.

Keep in mind that if you desire to see how much torsional play a coupling has (how much it "backlashes", you should first try to position the laser and sensor as close as possible to the O.D. of the coupling. If the coupling is too small to "skim" across the top of the coupling, place the laser and sensor as close as you can to the shaft (lowest point on the support posts). Obviously, the farther up the components are placed on the support posts, the larger your results will be. If they are "skimming " the top of the coupling, the values will be very close to the actual amount that the coupling halves backlash relative to each other at their O.D. Another alternative (on large couplings) is to instead shoot the beam through one of the coupling bolt holes, provided the hole is close to the rim or O.D. of the coupling. Special magnetic brackets can facilitate this.

Here is how to measure backlash with a ROTALIGN® PRO or ROTALIGN® ULTRA laser shaft alignment system:

1) Take up all the coupling backlash all the way in one direction.
2) Position the Laser and Receiver as close to the O.D. of the coupling as possible and center the laser beam in the Receiver cap.
3) Turn the computer on and press the "Measure" key.
4) Go to the "XY View" screen.
5) Adjust the laser in the sensor so that the laser is in both the front and back sensor planes (Planes 1 & 2.) Try to position the beam in both plane 1 & 2 even with no angle. The "absolute" X & Y coordinates on both sensors will be displayed on the screen.
6) Select "Set Zero". This will zero the X & Y values for both sensors in the current position. This establishes your starting reference.
7) Turn the coupling halves so as to cause backlash in the opposite direction (as in step 1). The total backlash amount will then be displayed as the change in the X-Axis value. Use the value from Plane 1. (The "X" values for Planes 1 & 2 should be almost the same, but ignore the Plane 2 value. Also ignore the values seen in the "Y" axis.
8) Repeat Steps 4-8 to establish repeatability.

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Keep in mind that each coupling has its own characteristics and backlash values that are considered to be “normal”. Furthermore, the values seen will change from a misaligned condition to the aligned condition. Elastomeric type (rubber insert type) couplings will be “spongy” and will not have a true backlash stopping point, whereas the shim type coupling will have no backlash at all.