

TechNote #33 ROTALIGN®/OPTALIGN® PLUS

Uncoupled shaft alignment with Multipoint measurement mode

Accurate uncoupled measurement

Uncoupled shafts present a special alignment challenge, especially when considerable separation exists between the coupling faces. Both OPTALIGN® PLUS and ROTALIGN®, however, feature an easy-to-use 'multipoint' measurement mode which gives extremely accurate alignment measurements of uncoupled shafts with far less effort than any other method.

Particularly with ROTALIGN®, this technique can be especially useful when continuous shaft rotation is too fast for the 'pass' mode to register readings. Its high accuracy is comparable to that of the 'pass' mode as well.

Multipoint measurement mode

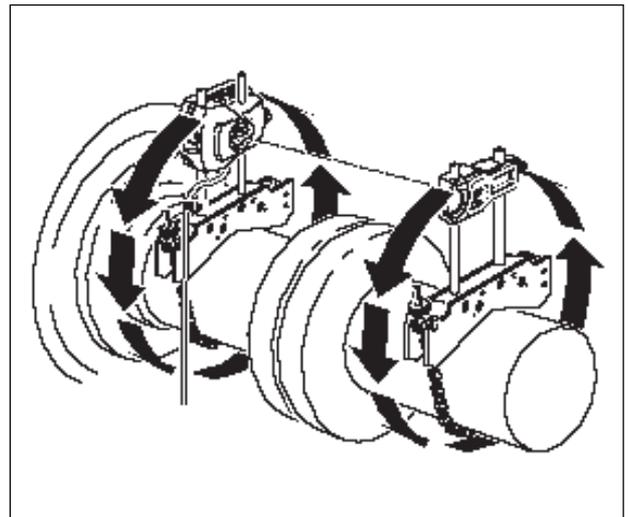
Besides uncoupled shafts, this measurement method is especially useful when

- shafts cannot easily be turned in one sweep
- measurement is possible only in limited positions
- oil film thickness must be compensated by allowing the shafts to settle in each measurement position before readings are taken.

In multipoint mode, individual measurements are made at a series of rotation angles. This gives you more control over the measurement both in terms of the time taken and positioning: as long as at least five positions are measured during at least 75° of rotation, any desired measurement positions can be used. (See also Technical Notes #24 and #31 for details on standard multipoint measurement.)

Simple procedure

Uncoupled shafts can often be difficult to rotate exactly together. PRÜFTECHNIK laser alignment products, however, let you rotate the shafts alternately through a series of different measurement angles. No levelling devices are required: at each position, the visible red laser beam clearly shows when both shafts are at the same rotation angle. (Here, the patented multipoint algorithm even allows several degrees of leeway with no noticeable loss of accuracy!) This simple procedure is outlined separately here for OPTALIGN® PLUS and for ROTALIGN®.



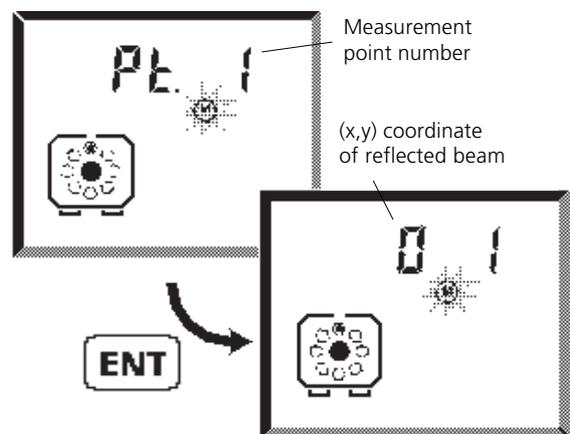
OPTALIGN® PLUS procedure

1. Set up the components and enter machine dimensions. Turn the shafts to the first measurement position.

2. Press  , align the laser as usual.

3. Press  to select multipoint mode and to take the first measurement.

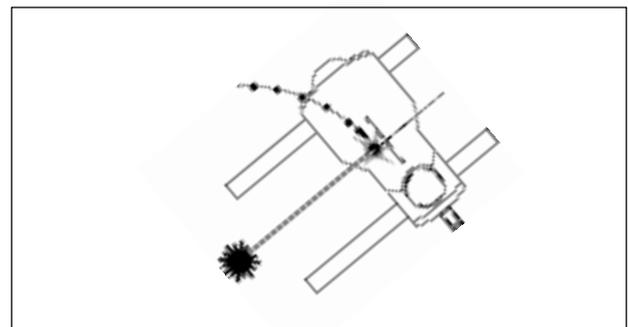
The screen displays 'tStX' (X=0, 1,2,3...), then 'Pt. 1' when the first measurement point is recorded, indicated by a highlighted bolt, followed by the x,y coordinates.



4. Turn the shaft with the prism assembly to the next measurement point (at any desired rotation angle), then place the dust cap on the prism.

5. Turn the other shaft (with the transducer assembly) until the laser beam is centered on the vertical line of the prism cap target as shown at right.

Maintain this shaft position while removing the dust cap, then pressing  to take the next alignment reading. Following the 'tStX' display, the screen displays the second measurement point number, 'Pt.2', then the x,y coordinates.



6. Repeat steps 4 and 5 until at least 5 points have been taken during at least 75° of shaft rotation.

7. When finished, press the  key.

ROTALIGN® procedure

1. Set up the components and enter machine dimensions. Turn the shafts to the first measurement position.

2. Press , then select Multipoint Mode either from the 'Enter measurement mode' screen or from the main menu.

3. Align the laser as usual.

4. Press the TAKE POINT softkey to record the first measurement. The shafts must not be moved for approximately two seconds, until a dot appears on the target diagram in the display and the counter in the upper right-hand corner increases from '0' to '1'.

5. Turn the shaft with the receiver assembly to the next measurement point.

6. Turn the other shaft (with the emitter assembly) until the dot (which represents the laser beam) is centered on the vertical line of the display target as shown below. Maintain the shafts in this position while pressing the TAKE POINT softkey to take the next alignment reading. A second dot appears on the target diagram.

The small circle in the upper right-hand corner of the display indicates the rotation angles at which measurements have been taken.

7. Repeat steps 5 and 6 until at least 5 points have been taken during at least 75° of shaft rotation. When sufficient measurements have been taken, results appear in the boxes marked 'H' and 'V' and the cross disappears from the circle diagram in the upper right-hand corner.

8. When finished, press  to display results.

