



Right Angle Gearbox

This procedure is to align a gearbox connected to a vertical shaft when corrections have to be made at the gearbox feet.

For such set up, the gearbox becomes the MTBM and the feet are visualized as being the bolt circle where the shimming will be performed to correct shaft angularity.

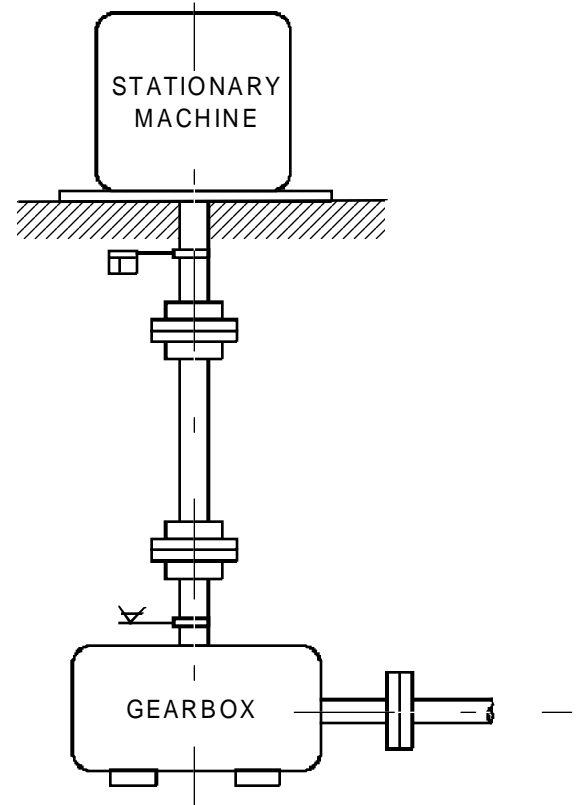
Overview

Set up laser on stationary shaft and prism on gearbox shaft. Press **F 5**. Enter maximum base plate diameter. Enter actual laser to prism distance. Enter distance from prism to coupling center and a coupling diameter of 10".

Since the inclinometer does not work in the vertical alignment 0, 3, 6, 9 have to be controlled by some other method. Take alignment reading in at least 3 clock positions. Press  to obtain correction values for gearbox feet. Press  and record misalignment values.

Perform corrections opposite to the values displayed by Optalign for that foot. If Optalign recommends to add shims, then remove shims.

An alternate way will be to carry out Optalign suggested corrections on the foot diagonally opposite (if such a bolt exists). Once angularity is within tolerance, correct offsets, if any, following Tech Note 16.



LUDECA, INC.
1425 NW 88th Avenue
Miami, FL 33172

Phone: (305) 591-8935
Fax: (305) 591-1537

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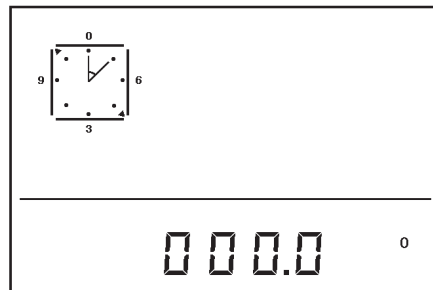
Procedure

Choose 12 o'clock position to be between two consecutive bolts. Each 90° increment clockwise will be the 3, 6, 9 clock positions respectively. Set laser on stationary and prism on gearbox shaft.

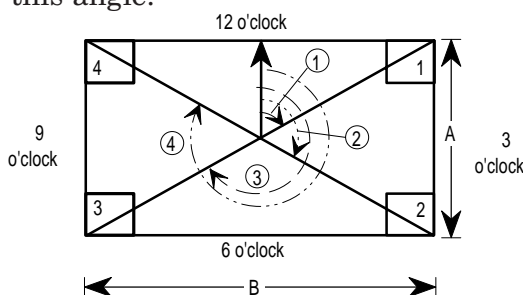
- 1) **ON/OFF**, **/**, **F**, **5**
- 2) Enter maximum base plate diameter (not the bolt circle diameter), **ENT**
- 3) Enter laser-to-prism: actual distance between laser and prism, **ENT**
- 4) Enter distance prism-to-coupling-center, **ENT**
- 5) DIA = 10", **ENT**
- 6) **M**, zero system at 12 o'clock and take alignment readings.
- 7) **VIEW**, record coupling results (VO, HO, VA, HA).

If VA or HA are **not** within tolerance follow step 8. If VA and HA are within tolerance follow the Moving Procedure in Tech Note 16.

- 8) Press **Optalign** will take a few seconds to display.



Now the angular position of the first foot away from 12 o'clock must be entered. See examples on how to calculate this angle.



Example 1:

Gearbox shaft in center of gearbox.

Tangent ① = $B \div A$; find the value of angle ① using a calculator. (INV TAN at $B \div A$)

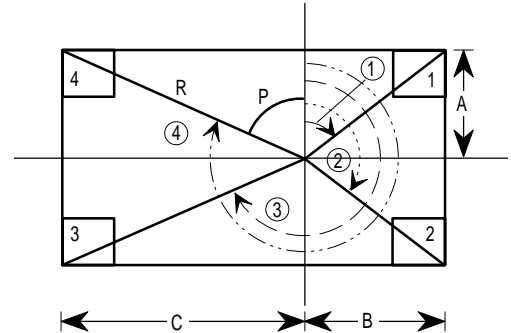
say,

Angle ① = α , therefore

Angle ② = $180 - \alpha$

Angle ③ = $180 + \alpha$

Angle ④ = $360 - \alpha$



Example 2:

Gearbox shaft centerline *not* at center of gearbox.

Enter front to back foot distance = $2R$

Tangent ① = $B \div A$, find the value of angle 1 using a calculator.

Angle ① = α

Angle ② = $180 - \alpha$

To calculate angles ③ and ④ we must first calculate angle P; then

Angle ③ = $180 + \text{angle P}$

Angle ④ = $360 - \text{angle P}$

Tangent $p = C \div A$; find the value of angle P using a calculator.

Make sure that the angle that corresponds to the diameter entered at front foot to back foot distance. To change the diameter see step 13.

- 9) Enter angle, **ENT**. Key in bolt circle diameter, **ENT**

- 10) Optalign will display correcting values (shimming) for that foot. **ENT**

- 11) **CLR**, enter new desired angle, **ENT**. Optalign will display correcting values (shimming) for that foot.

DIA = Coupling diameter

VO = Vertical Offset
HO = Horizontal Offset
VA = Vertical Angularity
HA = Horizontal Angularity

Note: If necessary, from the angle depiction press **RCL** to change the diameter of the bolt circle. Enter new diameter, clear displayed angle and enter desired angle. Optalign will display correction values (shimming) for the foot corresponding to the diameter entered as bolt circle diameter.

12) Repeat steps 9 to 11 until corrections for all feet are obtained.

13) Proceed to shim each foot opposite to Optalign's suggested correction.

Positive shimming means remove shims

If there are not enough shims under a foot to remove the indicated amount, it is possible to add an equal amount of shims to **all** feet and then carry out the corrections.

14) Recheck alignment.