

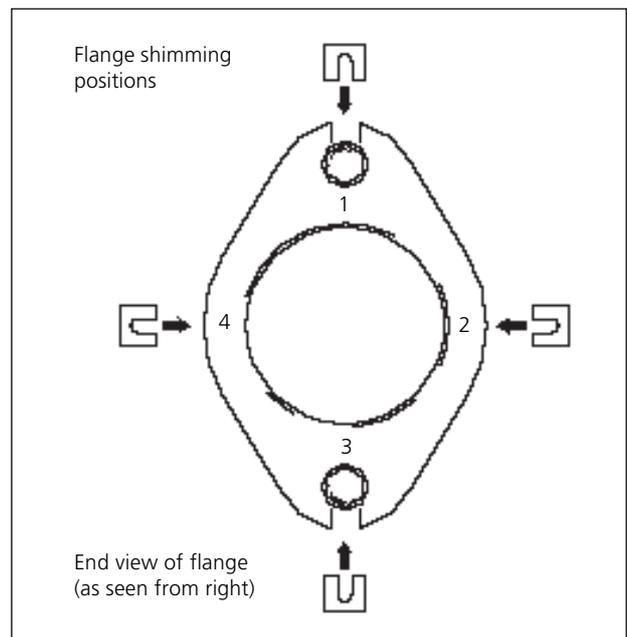
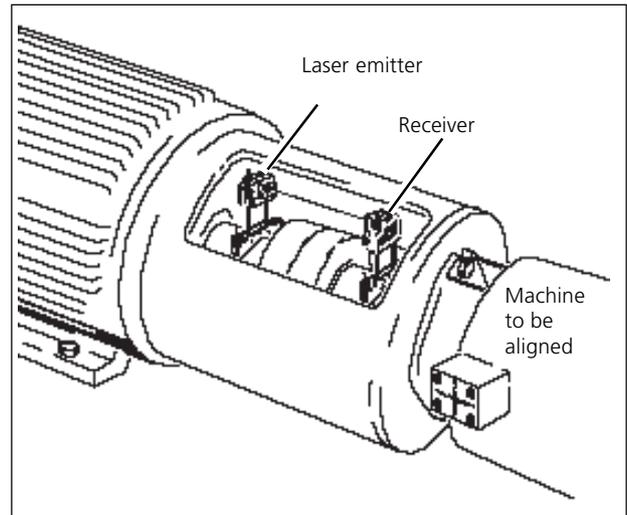
TechNote #22 ROTALIGN®

ROTAGIGN® handles two-bolt flange alignment with ease

Introduction

When machines are joined by means of a two-bolt flange, their alignment is determined by inserting the proper combination of shims at the flange bolts and at the sides of the flange. In fact, the requirements are actually quite similar to those for aligning vertical machines, and ROTALIGN provides the same precision and convenience by means of the procedure described here.

When the shaft rotates around a horizontal axis, the electronic inclinometer built into the receiver can be used to detect the rotational position during measurement, and so either the Multipoint or Continuous Sweep measurement mode may be used to align the shafts. These two modes are described in detail in the instruction manual for the standard horizontal machine arrangement. Based on the measurements taken, the computer determines the thicknesses of shims to be fitted between the flanges required to align the shafts.



Alignment procedure

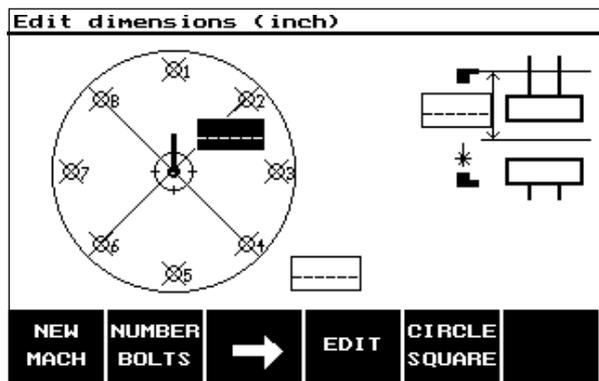
1) Set up ROTALIGN

- a) Mount the ROTALIGN laser and receiver on the shaft. The laser mounts on the left machine, to be considered stationary, and the receiver on the right (the machine to be aligned). This arrangement matches the standard ROTALIGN screen display for horizontal machines.
- b) Switch on ROTALIGN and select the vertical machine application from the introductory screen.

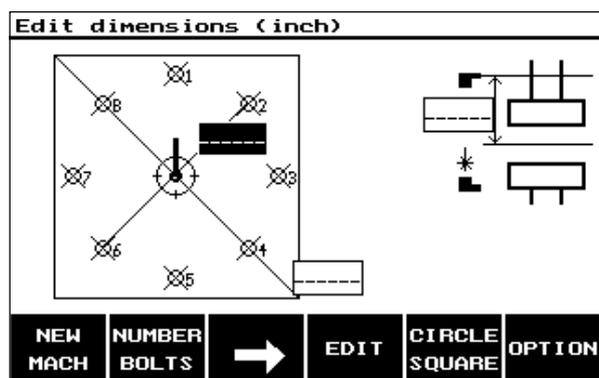


2) Enter dimensions

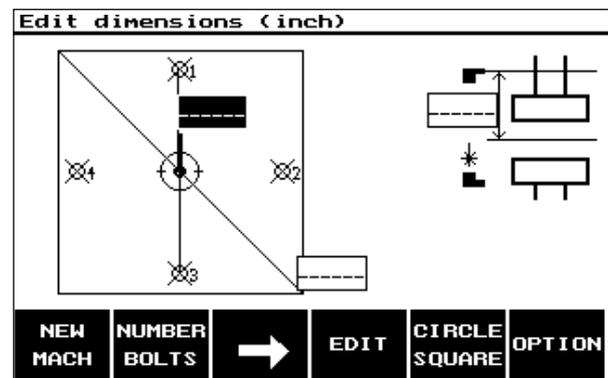
- a) The flange dimension screen appears as shown below (for a new machine).



- b) The default bolt pattern is circular. Press CIRCLE/SQUARE once to change this to a circular bolt pattern within a square flange.



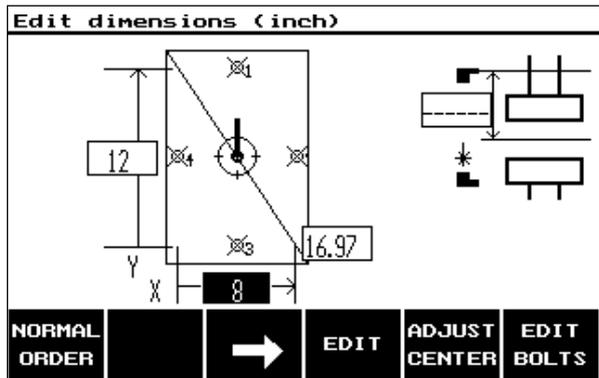
- c) The default shows a flange with 8 bolts. To change this for the two-bolt flange with four shimming locations, press NUMBER BOLTS, then '4', then press ENTER.



- d) Since the two-bolt flange is not symmetrical, set the proper flange dimensions:

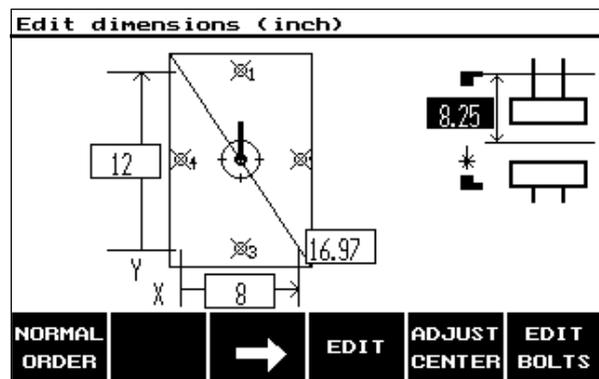
1. Press the OPTION key. The vertical distance between bolts is now highlighted in the displayed end view of the flange.
2. Enter the (vertical) distance between the centers of the flange bolts. Press ENTER to confirm the entry.
 (Note: for this and all other entries, the EDIT key may be pressed, if desired, in order to display a description of the required dimension in the status line at the top of the screen.)

- d) 3. Enter the (horizontal) distance between the centers of the left and right flange shimming locations. Press ENTER to confirm the entry.



(The diagonal dimension is calculated automatically and can be ignored for machines with two-bolt flange arrangements.)

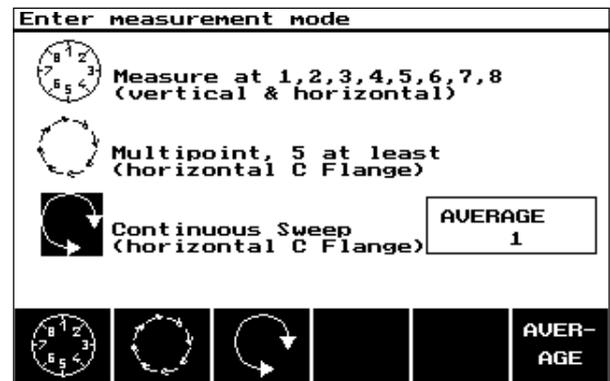
- e) Press the arrow key to proceed to the distance between coupling center and ROTALIGN receiver. Key in this distance and confirm with the ENTER key.



3) Measure

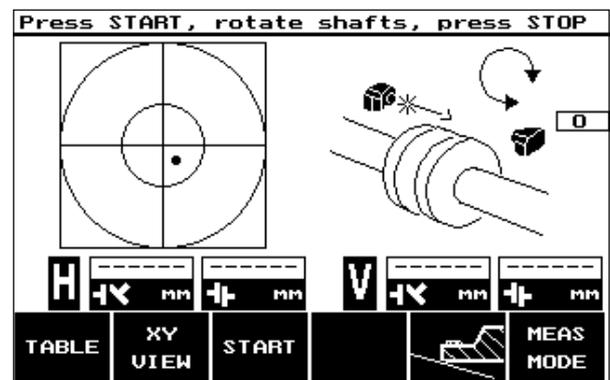
Since the flanged machines under consideration here are mounted horizontally, a wider choice of measurement methods is available for them than for vertical machines.

- a) Press the M key to enter the measurement screen, then press the 'MEAS MODE' softkey to obtain the following display:



The lower two options rely on the inclinometer within the receiver to determine rotational position, so these are reserved for horizontal shafts.

- b) Press the corresponding key to select the desired measurement method (for example, the continuous sweep mode as shown here):



Adjust the laser beam into the receiver and proceed with measurement as directed in the ROTALIGN Operating Instructions.

4) Results

When you have finished taking measurements, press the 'Results' key:



Measured parallel offs & shim (mils)

mils

↑ 5.2

← 1.2

#	Shim (0+)
1	0.0
2	4.0
3	4.3
4	7.2

MOVE
↑
↓
SAVE
+/-

The flange is depicted as viewed from the right machine toward the left. The bolts in the figure correspond to the bolts (or shimming positions) on the flange, with the top position marked '1'.

The offset corrections are shown on the left portion of the screen. In the example shown here, the values are 5.2 mils up and 1.2 mils to the left (i.e. toward the viewer in the standard ROTALIGN screen described in Step 1 above).

The table on the right lists the calculated shim corrections. Press the '+/-' key if necessary to set the column heading to 'Shim (0+),' which means that shimming is calculated such that one bolt position or shimming location requires zero shimming, and all remaining positions are shimmed by positive amounts. (The solid line joining the bolts in the diagram indicates that the bolt centers now function as 'corners,' with the original bolt flange dimensions appearing as a dashed line.)

5) Fit shims

Loosen the bolts and fit the shims according to the values given in the table. Try to avoid any lateral movement of the machine when doing so. When finished, retighten bolts.

6) Repeat readings

Press the 'M' key to take a new set of readings before beginning offset corrections. The results should now show little if any shimming corrections after shim fitting in step 5 above.

7) MOVE to eliminate offset

Press the softkey marked 'MOVE' to start the offset correction function. Rotate the shafts such that the laser emitter and receiver are located at bolt position number 1 (the top position for horizontal shafts; see step 4 above), then press the 'START' softkey to begin lateral positioning for correction of offset.

Do not loosen the machine anchor bolts until after START has been pressed! Move the machine laterally while viewing the screen; note the order of the bolts for correct orientation (refer to step 4 above if necessary). Jack bolts or other mechanical or hydraulic adjustment methods are recommended for best results.

Tighten down the anchor bolts, then press STOP to conclude the offset alignment procedure.

8) Final check

Press the 'M' key to take a final set of readings in order to confirm proper alignment.

