

Converting Rim and Face Indicator Readings into Optalign Targets

This note shows you how to calculate and enter Optalign targets (intentional misalignment at coupling) given indicator readings from Rim and Face Indicator Method.

Overview

Machine dimensions are entered in the Optalign as in a regular alignment.

The indicator readings will be given at the indicator stems, and must be converted into Optalign coupling results. The calculated results will be entered as Optalign targets.

$$a) \text{VOt} = \frac{(F6-F0+FS) \times CR + (RO-R6+RS)}{D} \times \frac{1}{2}$$

$$b) \text{HOt} = \frac{(F9-F3) \times CR + (R3-R9)}{D} \times \frac{1}{2}$$

$$c) \text{VA}t = \frac{(F6-F0+FS)}{D} \times 10$$

$$d) \text{HA}t = \frac{(F9-F3)}{D} \times 10$$

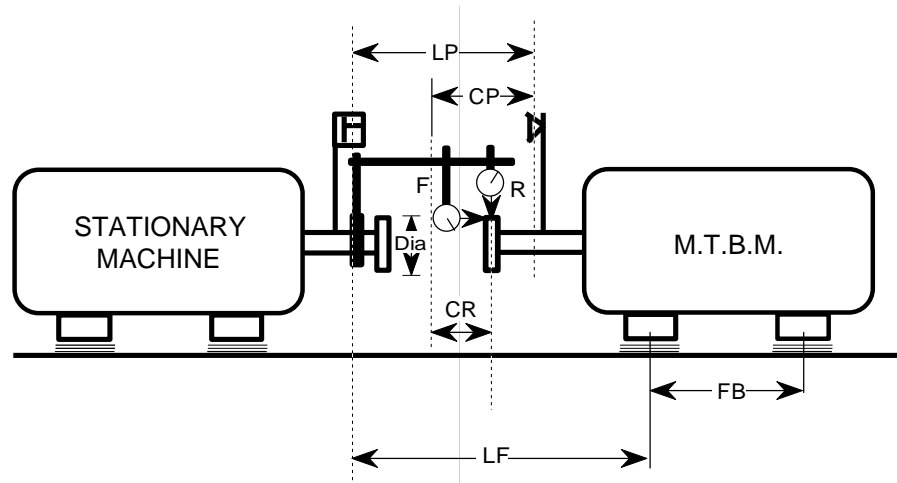
e) Zero system and take alignment readings.

f) Record feet corrections.

g) Record coupling results (VO, HO, VA, HA).

h) Carry out corrections.

LP = Laser-to-prism
 LF = Laser-to-front-foot
 FB = Front-to-back-foot
 CP = Coupling-center-to-prism
 DIA = Coupling diameter
 D = Diameter of the circle traveled by the face indicator foot
 CR = Distance from rim indicator to coupling center



VOt = Vertical Offset target
 HOt = Horizontal Offset target
 VAt = Vertical Angularity target
 HAt = Horizontal Angularity target

RO = Rim reading at 12:00
 R3 = Rim reading at 3:00
 R6 = Rim reading at 6:00
 R9 = Rim reading at 9:00
 RS = Sag of rim indicator

F0 = Face reading at 12:00
 F3 = Face reading at 3:00
 F6 = Face reading at 6:00
 F9 = Face reading at 9:00
 FS = Sag of face indicator

Procedure

- 1) , ,
- 2) Enter machine dimensions as follows:
 Enter LP,
 Enter LF,
 Enter FB,
 Enter CP,
 DIA = 10",
- 3) Calculate Optalign targets:

$$\begin{aligned}
 VOt &= \frac{(F6 - F0 + FS)}{D} \times CR + \frac{(R0 - R6 + RS)}{2} \\
 HOt &= \frac{(F9 - F3)}{D} \times CR + \frac{(R3 - R9)}{2} \\
 VAt &= \frac{(F6 - F0 + FS)}{D} \times 10 \quad (\text{For 10" coupling diameter}) \\
 HAt &= \frac{(F9 - F3)}{D} \times 10 \quad (\text{For 10" coupling diameter})
 \end{aligned}$$

- 4) Press
- 5) Enter VOt,
- 6) Enter HOt,
- 7) Enter VAt,
- 8) Enter HAt,
- 9) Activate measure mode,
- 10) Take misalignment readings in at least 3 clock positions.

- 11) , record feet corrections.
- 12) , record VO, HO, VA, HA.
- 13) If alignment is not within desired tolerances make corrections and repeat steps 10 and 11.

Example:

LP = 24" CP = 15"
LF = 26" CR = 14"
FB = 20" D = 12"

Indicators Readings

R0 = 0 F0 = 0
R3 = 1 F3 = 4
R6 = 2 F6 = 8
R9 = 1 F9 = 4
RS = -4 FS = -1

$$VOt = \frac{(8 - 0 + (-1)) \times 14 + (0 - 2 + (-4))}{12}$$

$$= \frac{7 \times 14 + (-6)}{12}$$

$$= 8.2 - 3$$

$$= 5.2 \text{ mils}$$

$$HOt = \frac{(4 - 4) \times 14 - (1 - 1)}{12}$$

$$= 0 \text{ mils}$$

$$VAt = \frac{(8 - 0 + (-1)) \times 10}{12}$$

$$= \frac{7 \times 10}{12}$$

$$= 5.8 \text{ mils/10"}$$

$$HAt = \frac{(4 - 4) \times 10}{12}$$

$$= 0 \text{ mils/10"}$$