Application Note

SKF Microlog Balancing Module

Single plane balancing at resonance and three point (circle) method of balancing

Three point (circle) method of balancing

With the rotor operating at normal speed, measure and record the original vibration amplitude as 0', e.g., 6 mils. Draw a circle with a radius equal to 0'.

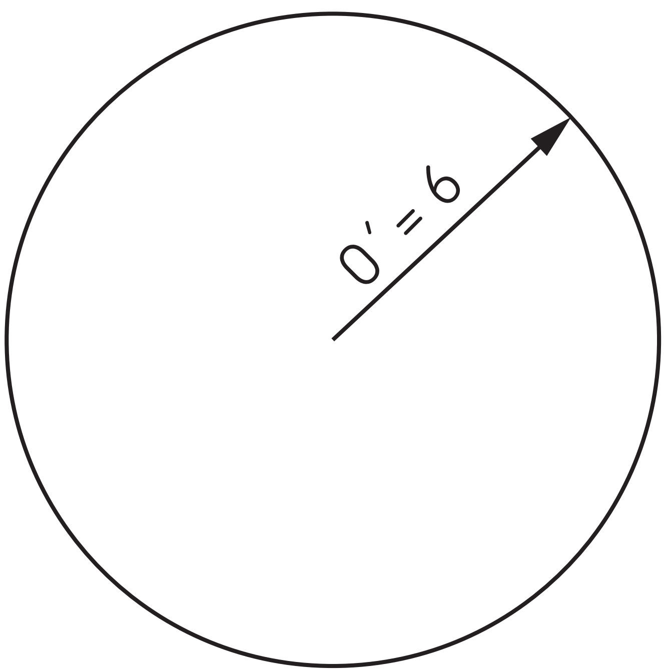

Figure 1. Draw a circle with a radius equal to 0'.

Stop the rotor. Mark on the rotor three points "A", "B" and "C" approximately 120° apart. These three points need not be exactly 120° apart, however, the precise angles of separation must be known.

Mark the respective positions of points "A", "B" and "C" on the original circle, as shown below. Select a suitable trial weight (TW) and attach it to position "A" on the rotor. In this example, a weight of 10 oz. is used; therefore, TW = 10.

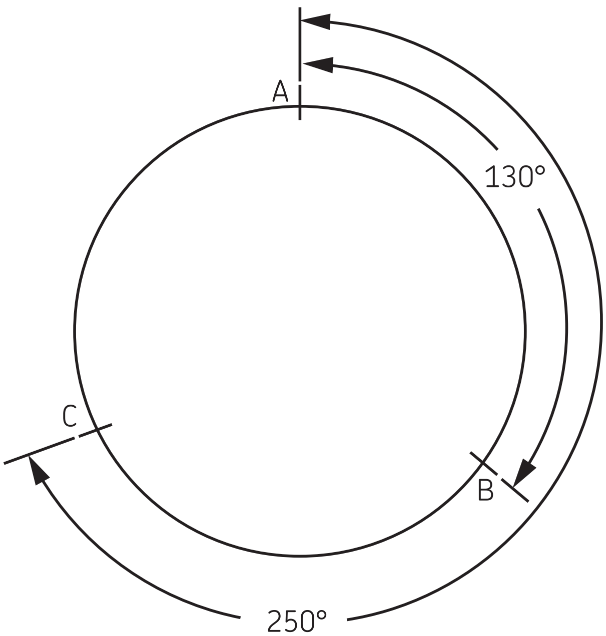

Figure 2. Mark the respective positions of points A, B and C on the circle.

Start the rotor and run it at the same speed as for the initial run. Measure and record the new vibration amplitude as 0' + T_1. **Stop the rotor** and move the trial weight to position "B". Using point "A" of our circle as the center point, draw a circle with a radius equal to 0' + T_1 (in this example, we will use 4 mils).

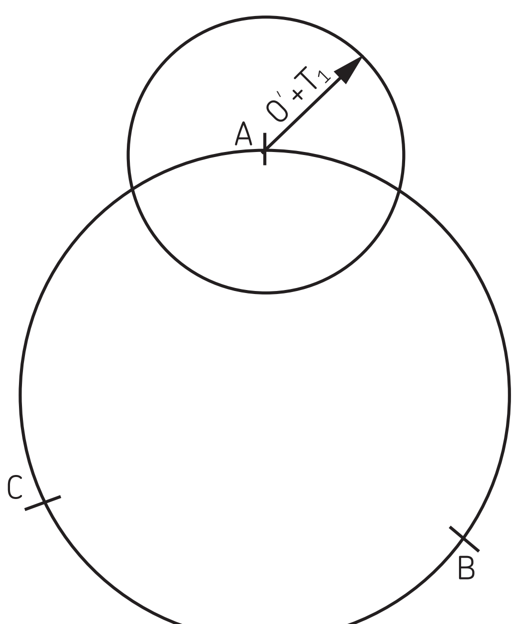

Figure 3. Draw a circle with a radius equal to 0' + T_1.

Start the rotor and run it at the same speed as for the initial run. Measure and record the new vibration amplitude as 0' + T_2. **Stop the rotor** and move the trial weight to position “C”. Using point “B” of our circle as the center point, draw a circle with a radius equal to 0' + T_2 (in this example, we will use 8 mils).

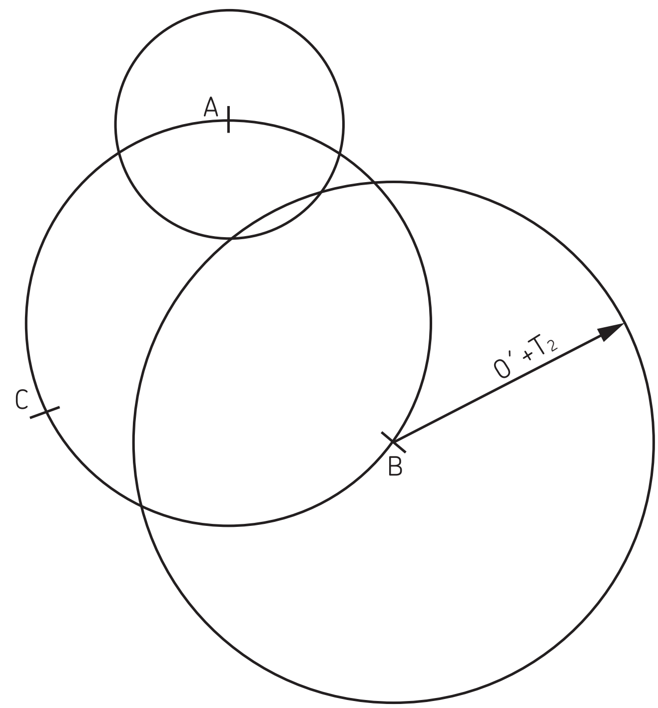

Figure 4. Draw a circle with a radius equal to 0' + T_2.

Start the rotor and run it at the same speed as for the initial run. Measure and record the new vibration amplitude as 0' + T_3. **Stop the rotor** and remove the trial weight. Using point “C” of our circle as the center point, draw a circle with a radius equal to 0' + T_3 (in this example, we will use 8 mils).

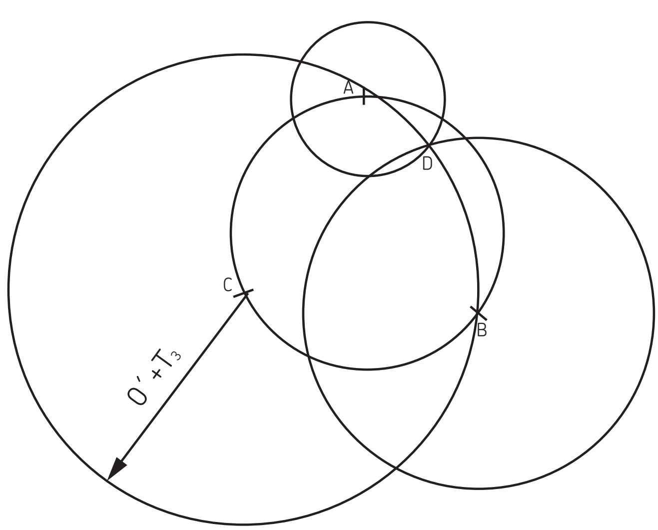

Figure 5. Draw a circle with a radius equal to 0' + T_3.

Note: The three circles drawn at “A”, “B” and “C” intersect at a common point “D”.

Draw a line from the center “0” of the original circle to point “D”, as shown. Label this line “T”. Measure the length of line “T” using the same scale used in drawing the circles (in our example, line “T” is 5,25).

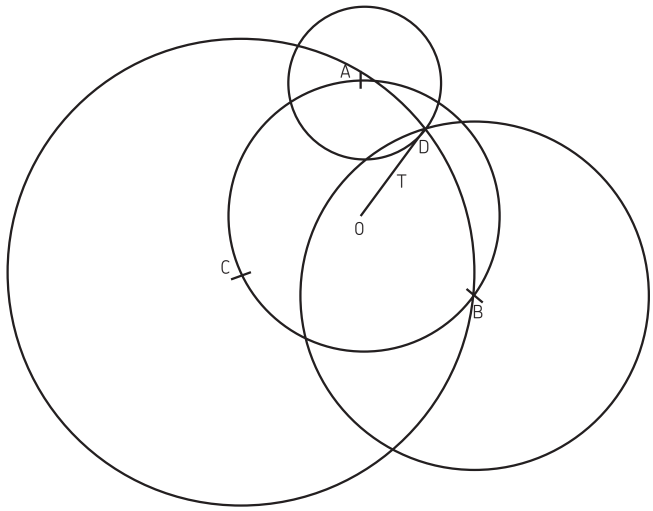

Figure 6. Draw a line from the center of the original circle "0" to point D.

Calculate the balance correction weight amount using the formula:

- CW = TW (0'/T)

Where:

  - CW = Correction weight
  - TW = Trial weight
  - 0' = The original unbalance reading
  - T = The measured resultant vector

So, using the example data, we get:

- CW = 10 oz. × (6,0 / 5,25)
- CW = **11,4 oz.**

Using a protractor, measure the angle between line "T" and line "0A". **This measured angle is the angular location for the correction weight, located relative to point "A" on the rotor.** Attach the correction weight derived from your calculations to the rotor at the angular position as determined above.

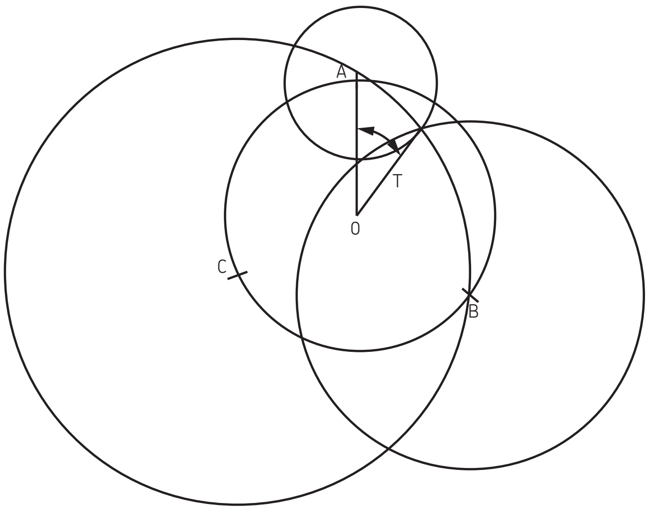

Figure 7. Measure the angle between line T and line 0A.

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