Tech Sheet

Measuring a Small Arc

Steps to measure a circle with less than 90 degree's of arc:

- 1. Measure the small arc as a Measured Circle (a measured circle is used in this example although Auto Circle will also work).
 - Measure the circle on-line or
 - Pick it from the Model or
 - Key in the values
- 2. In this example, the back arc on the Hexagon Demo Block will be used.



- 3. Edit (**F9**) the circle.
 - Add additional hits.
 - Change the "Best Fit Math Type" to "FIXED RAD".
 - Key in the **Nominal Diameter**.
 - Check 🗹 Regenerate Hit Targets
 - Press **OK**.
 - When prompted "Ok to equally space hits?" answer YES.

| Feature name: | Number of hits: |
|------------------------|-----------------------|
| CIR1 | 15 |
| Reference type: | Workplane: |
| WORKPLANE - | ZPLUS 💌 |
| Best Fit math type: | Coordinate system |
| FIXED_RAD 🔫 | Rect C Polar |
| Regenerate hit targets | Circular feature type |
| Copy to actuals | C In 🔍 Out |
| Feature theoreticals | |
| X NOM: 3.8786 | I NOM: 0 |
| Y NOM: -5.7328 | J NOM: 0 |
| Z NOM: -0.2500 | K NOM: 1 |
| Diameter: 19.9409 | Start angle: 100 |
| | End angle: 60 |
| Hit Targets | OK Cancel |

pc•dmis

- 4. Execute the feature **Ctrl E** to update the measured data.
- 5. Dimension the location fixed Radius circle. This will verify the <u>location</u> of the radius.
- 6. Enter the location Nominals and Tolerances.

| 0 | IN | LOC4 - CIR1 | | | | | |
|--------------|--------|-------------|--------|--------|--------|--------|--|
| AX | MEAS | NOMINAL | +TOL | -TOL | DEV | OUTTOL | |
| х | 3.8797 | 3.8786 | 0.0100 | 0.0020 | 0.0011 | 0.0000 | |
| Y | -5.732 | 1 -5.7328 | 0.0100 | 0.0020 | 0.0007 | 0.0000 | |

7. Create an Alignment and set origin on Fixed Radius circle.



8. Open the Parameter Settings Dialog *F10*. Select the Probing Tab and enable polar compensation for the active workplane.

Note: Skip this step when using CAD and use Vector points rather than Measured points.

| - | Deshing | | |
|---------------|---------------|----------------|----------------|
| arance Plane | Probing | Motion | Accelera |
| 1 | - | | |
| 1 | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| n active (ON) | | | |
| tion: | | | |
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| | | | |
| | | | |
| | | | |
| | n active (ON) | In active (ON) | In active (ON) |

9. With the joystick, measure 3 or more individual Measured Points on the Radius.

Note: If you are using CAD, use Vector Points and pick from model.



10. Dimension the individual points using Location dimension
☐ and select the "
Prad" check box (Polar Radius). This will verify the size of the radius.

| Feature Location | | | | | | | |
|--|---|---|---|---|---|---|--|
| ID: LOC1 Search ID: Select Last #: CIR1 PNT1 1 PNT2 2 PNT3 3 | Axes Auto X Y Prad Pang Defau Sheet met T S PD Location o Retrol Gap o Half a | D R A L H V It Form al axes RT RS ptions inear only nly ngle | Tolerances Axes: Plus: Minus: ISO limits and Nominal size: Tolerance da NONE Tolerance gr NONE Dimension in Display Edit. | PR .01 .01 .01 .01 .01 .01 .01 .01 .01 .01 | Create Close Units Improvement Cotput to Cotput to Cotput | | |
| PNT1 = Measured Point PNT2 = Measured Point PNT2 = Measured Point | R Axis | Nominal | +Tol | -Tol | Update Feature | | |
| Pivi 5 = Measured Point | X | -2.250588 | 0.002000 | 0.002000 | | | |
| | Y | 9.713173 | 0.002000 | 0.002000 | | | |
| | Z | -0.303681 | 0.002000 | 0.002000 | | | |
| | PR | 9.970500 | 0.010000 | 0.010000 | | | |
| | PA | 103.045496 | 0.010000 | 0.010000 | | Ξ | |
| | A | 45.000000 | 0.000400 | 0.000400 | | | |

11. Enter Nominals and Tolerances for the Polar Radius'.

| † | IN | LOC1 - PNT1 | | | | | |
|--------------|--------|-------------|--------|--------|---------|--------|--|
| AX | MEAS | NOMINAL | +TOL | -TOL | DEV | OUTTOL | |
| PR | 9.9720 | 9.9705 | 0.0100 | 0.0100 | 0.0015 | 0.0000 | |
| # | IN | LOC2 - PNT2 | | | | | |
| AX | MEAS | NOMINAL | +TOL | -TOL | DEV | OUTTOL | |
| PR | 9.9716 | 9.9705 | 0.0100 | 0.0100 | 0.0011 | 0.0000 | |
| # | IN | LOC3 - PNT3 | | | | | |
| AX | MEAS | NOMINAL | +TOL | -TOL | DEV | OUTTOL | |
| PR | 9.9701 | 9.9705 | 0.0100 | 0.0100 | -0.0004 | 0.0000 | |

12. Open the Parameter Settings Dialog **F10** and turn <u>off</u> polar compensation.