CIRC-SET Macro with CIRCLE & FULL-CIRCLE Jobs

# Introduction

In larger robot arms smaller circles may not path perfect circles. These jobs will allow the user to adjust 12 positions of a circle(clock-based) to compensate for kinematic faults.

# Background

The macro and jobs will use global byte variable 61, integers 50 & 51, position variables 59-73, and User Frame #60. Predetermined position variable and User Frame # can be modified if needed in CIRC-SET macro, CIRCLE & FULL-CIRCLE jobs if required. (Make sure to match changes between CIRC-SET macro, CIRCLE & FULL-CIRCLE jobs. Global byte, integer, and position variables are required due to data being transferred between jobs.)

The CIRC-SET macro & CIRCLE job were created during the DX100 controller generation. YRC1000 & YRC1000micro users are encouraged to use the FULL-CIRCLE instead of the CIRCLE job. Users may have robot hesitations at 3, 6, 9, & 12 o’clock positions in play mode when using CIRCLE job on the YRC1000 or YRC1000micro.

# Installation and use of macro and job

1. Enable the Macros function.
2. With defined TCP, create User Frame at the desired location. The User Frame origin will be referenced for location of the bend.
3. Load Macro job (CIRC-SET), load MACRO.DAT file, and then load CIRCLE job, in this order.
4. Create a new robot job.
5. Insert move at center of circle in parent job using defined TCP.
6. Insert CALL JOB:CIRCLE or FULL-CIRCLE job in parent job.
7. Modify Position variable 059(Circle center position) to the same position recorded in parent job.
8. Edit arguments CIRC-SET macro in CIRCLE job as listed below.

Argument definitions: (start all offsets(Arg#4-15 with 0.000mm values first time running to evaluated offsets required)

Arg#1: Circle Diameter… Enter diameter size(X.XXXmm) of circle to be created.

Arg#2: Speed 0-1500.0... Enter motion speed for robot’s circle path.

Arg#3: NOT USED… argument not used for the application.

Arg#4: 12 o’clock offset… Enter +/- X.XXXmm for offset of 12 o’clock position.

Arg#5: 1 o’clock offset… Enter +/- X.XXXmm for offset of 1 o’clock position.

Arg#6: 2 o’clock offset… Enter +/- X.XXXmm for offset of 2 o’clock position.

Arg#7: 3 o’clock offset… Enter +/- X.XXXmm for offset of 3 o’clock position.

Arg#8: 4 o’clock offset… Enter +/- X.XXXmm for offset of 4 o’clock position.

Arg#9: 5 o’clock offset… Enter +/- X.XXXmm for offset of 5 o’clock position.

Arg#10: 6 o’clock offset… Enter +/- X.XXXmm for offset of 6 o’clock position.

Arg#11: 7 o’clock offset… Enter +/- X.XXXmm for offset of 7 o’clock position.

Arg#12: 8 o’clock offset… Enter +/- X.XXXmm for offset of 8 o’clock position.

Arg#13: 9 o’clock offset… Enter +/- X.XXXmm for offset of 9 o’clock position.

Arg#14: 10 o’clock offset… Enter +/- X.XXXmm for offset of 10 o’clock position.

Arg#15: 11 o’clock offset… Enter +/- X.XXXmm for offset of 11 o’clock position.

1. Run the newly created job and test results.
2. Make required clock position changes based upon results.
3. Retest and adjust offsets until the circle path is acceptable.
4. Replace / comment CALL JOB:WATER\_ON & CALL JOB:WATER\_OFF in CIRCLE or FULL-CIRCLE job with appropriate call job for your application.

# Referenced Files

