



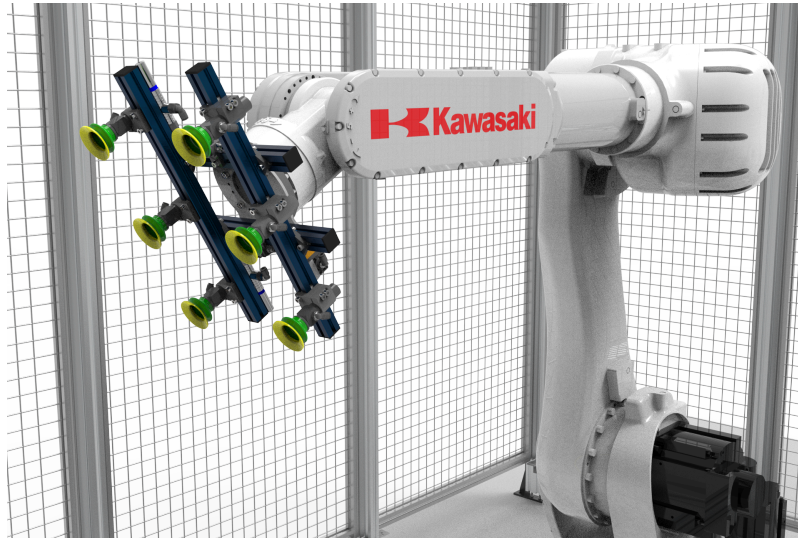
Kawasaki Tooling Terminology

# Contents

<b>Chapter 1. Overview of Kawasaki Tooling Terminology.....</b>	<b>3</b>
Tool IDs.....	3
Tool Numbers.....	4
Tool Points.....	4

# Chapter 1. Overview of Kawasaki Tooling Terminology

Forge/OS 5.3 opened the door for Tool Shapes support on Kawasaki robots. **Tool Shapes** allow you to monitor not just the tool center point (TCP) but rather the geometry of the tool. This way, your safety system can prevent the tool from moving past certain boundaries or exceeding certain speeds.



Tool Shape data is set on Kawasaki's CS-Configurator. You should not edit tool data on the Kawasaki pendant, but you will need to enter TCP data in Forge/OS.

Therefore, when adding or changing tools, the order of operations is as follows:

1. Add or modify TCPs and Payloads in Device Configuration in Forge/OS.
2. Connect the robot controller to a computer with Cubic-S Configurator.
3. Read Cubic-S Parameters.
4. Read Robot Parameters.
5. Read Tool Data.
6. Update Tool IDs, Tool No.'s, and Tool Points.
7. Write Parameters to Cubic-S.
8. Reboot the robot controller.

Included below is helpful information about the definitions and uses of Tool IDs, Tool No.'s, and Tool Points.

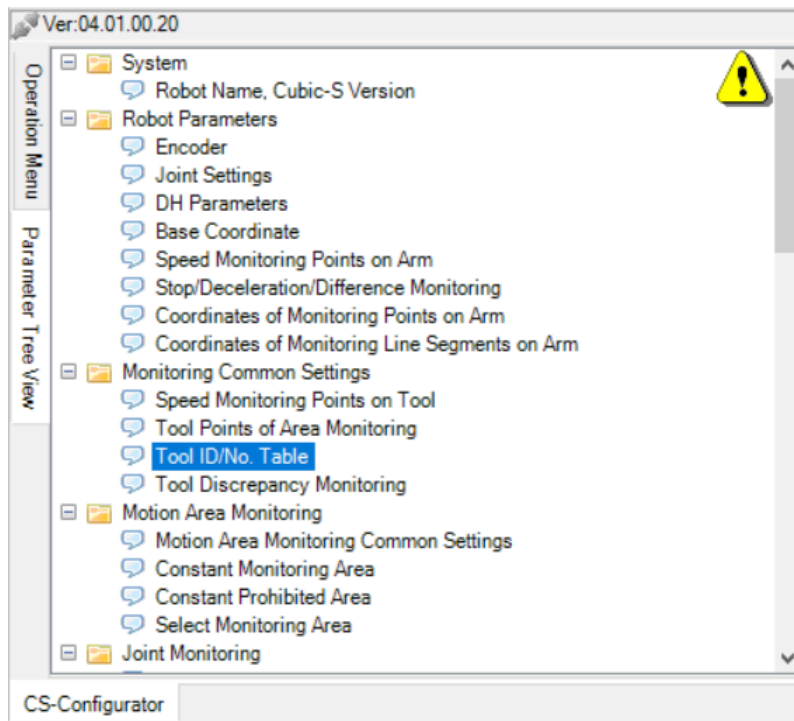
## Tool IDs

**Tool IDs** consist of five bits of data that are input from a connector on the controller. Forge/OS only interprets three of these bits, so you should only use **Tool IDs #0-7**.

## Tool Numbers

**Tool numbers** (abbreviated as “**Tool No.**”) can be thought of as the actual object that we interact with. CS-Configurator allows you to select and edit **Tool No.’s 1-32**, but Forge/OS only pulls data from **Tool No.’s 10-17**.

Each tool number has a corresponding Tool ID that it is mapped to. In the Parameter Tree View of Cubic-S Configurator, expand **Monitoring Common Settings** to view the **Tool ID/ No. Table**.



The Tool IDs should be mapped to Tool No.’s 10-17, repeating (with Tool0 = 10, Tool1 = 11, Tool2 = 12, ... Tool7 = 17, Tool8 = 10, Tool9 = 11, ... Tool15 = 17, Tool16 = 10, ... Tool23 = 17, Tool24 = 10, ... Tool31 = 17).

No.	Classification	Name	Unit	Tool No.
210	Tool ID Valid/Invalid	Tool ID Valid/Invalid	-	Valid
209	Tool ID/No. Table	Tool ID 0	-	10
		Tool ID 1	-	11
		Tool ID 2	-	12
		Tool ID 3	-	13
		Tool ID 4	-	14
		Tool ID 5	-	15
		Tool ID 6	-	16
		Tool ID 7	-	17

## Tool Points

**Tool points** can be thought of as the bounding box around the tool. Each tool number has a set of tool points to define its shape. In the Parameter Tree View of CS-Configurator, expand **Monitoring Common Settings** to view **Tool Points of Area Monitoring**.

