

# VE Series Demo Kit



## Demo Kit (97728) Components

	Models	Description
1	VE202G1C	VE Smart Camera, Vision + ID
2	SMBVERA	Right angle bracket
3	LEDRRV62X62	Red VE ring light
4	LCF08LEVMP	8 mm mega pixel lens
5	STP-M12-806	Ethernet cable
6	MQDC2S-1206	Power supply and cable
7	VELC60-PC	60 mm IP67 lens cover
8		Mounting arm and clamp
9		Targets— Dice (2), erasers (2), hose washers (2) Carrying case Setup Card (PN 194867) Quick Start Guide (PN 191667) Barcode Test Chart (PN 208706)

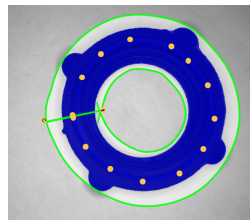
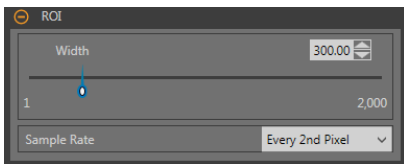
Download the latest software at [bannerengineering.com](http://bannerengineering.com)

The following labs are performed using VE Smart Camera and Vision Manager software. Connect to the camera from Sensor Neighborhood on the screen. The camera labs are performed using the supplied targets, with the camera mounted approximately 5 inches (130 mm) from the target. For the Bead and Blob labs, turn the supplied ring light on, select the from Tools & Results and from the Inputs tab expand External Strobe. The Strobe Type should be Active Low and the Mode should be Always On.

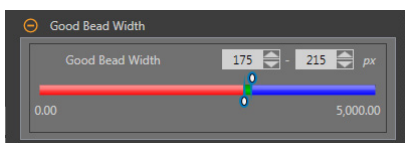
For best result, turn the internal trigger rate to 500 ms. To turn adjust the trigger rate, select the from Tools & Results and from the Inputs Tab expand Trigger. The Trigger Mode should be set to Internal and the Trigger Rate can be adjusted.

## Bead Tool Demo

1. Add Bead tool to the inspection.
2. Adjust the ROI path to match the rubber washer with the tabs sticking out. Adjust the Bead ROI width to be larger than the washer.
3. Adjust the Search ROI to fill the FOV.

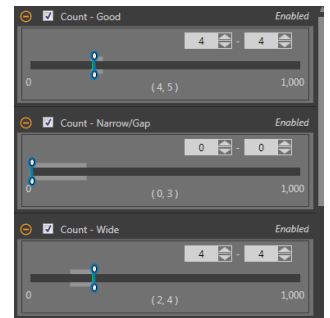


4. Set the bead width.
  - a. Expand the Good Bead Width parameter.
  - b. Move the sliders to define the minimum and maximum acceptable bead width. In this example, the minimum bead width is 175 pixels and the maximum bead width is 215 pixels.



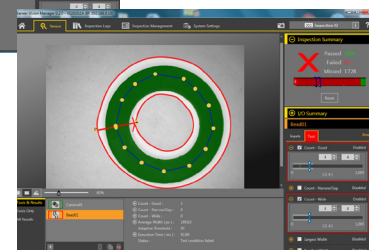
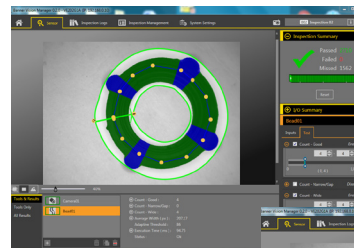
5. Set the test parameters to set the pass/fail criteria.
  - a. On the Test tab, select the Count - Good checkbox to enable the test parameter. Expand Count - Good and move the sliders or enter the minimum and maximum as 4 and 4. Four good regions must be found for inspection to pass.

- b. Select the Count - Narrow/Gap checkbox to enable the test parameter. Expand Count - Narrow/Gap and move the sliders or enter the minimum and maximum as 0 and 0. No narrow regions should be found.




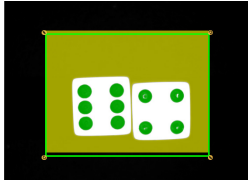
- c. Select the Count - Wide checkbox to enable the test parameter. Expand Count - Wide and move the sliders or enter the minimum and maximum as 4 and 4. Four wide regions must be found for the inspection to pass.

6. Test a good washer and a bad washer.

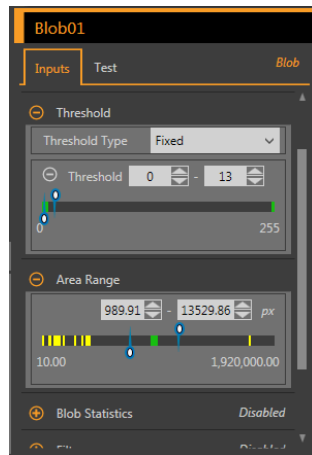


# Blob Tool Demo

1. Add  Blob tool to the inspection.
2. Adjust the ROI to frame to include both dice.

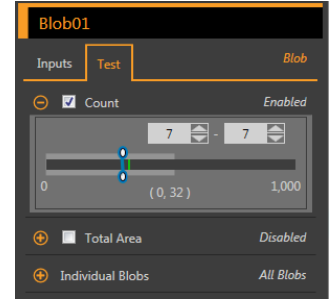


3. Set the threshold.
  - a. Expand the Threshold parameters.
  - b. From the Threshold Type list, select Fixed. Select Fixed when the lighting and image content will remain relatively constant for all inspections.
  - c. Expand the second Threshold parameters.
  - d. Move the sliders to define the minimum and maximum threshold. This sets a minimum and maximum brightness that the inspection is looking for.
4. Set the area range.
  - a. Expand the Area Range parameters.
  - b. Move the sliders to define the minimum and maximum size of pixel groups. Yellow indicates that a group of pixels is outside of the set range.

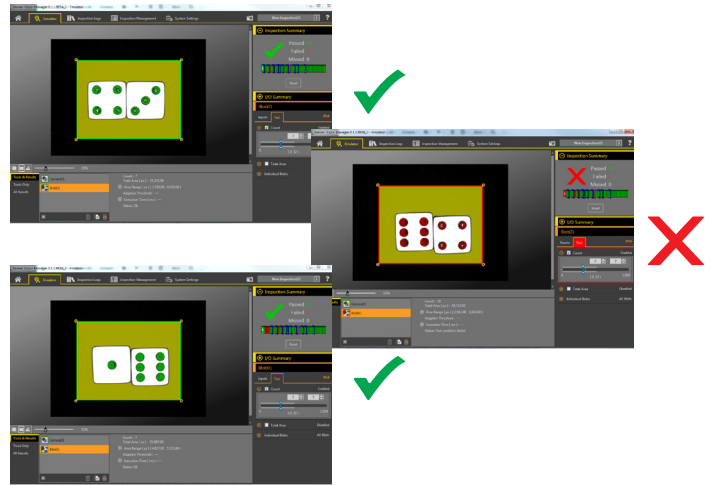


5. Set the Test parameters to set the pass/fail criteria.
  - a. On the Test tab, select the Count checkbox to enable the test parameter. This options sets the number of blobs that must be present within the ROI that match the inspection parameters so that the tool passes.
  - b. Expand Count and move the sliders or enter the minimum and maximum count a 7 and 7.


NOTE: The green bar indicates the current count and the light gray background indicates the count over time.

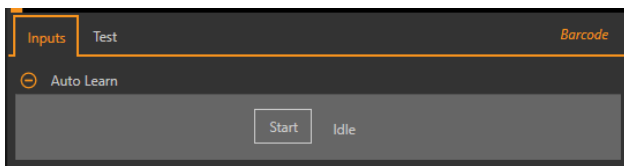


6. Roll the dice, any combination of 7 should pass and anything combination less or greater should fail.

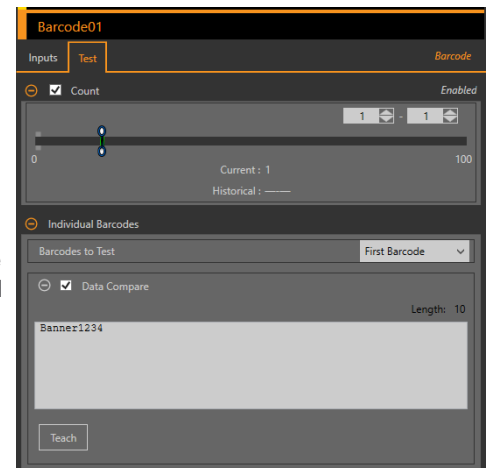


# Barcode Tool Demo


1. Add  Barcode tool to the inspection.
2. Present a barcode in front of the camera within the ROI.
3. Learn the barcode.
  - a. Expand Auto Learn.




4. Set the test parameters to set the pass/fail criteria.
  - a. On the Test tab, select the Count checkbox to enable the test parameter, select the number of barcodes present. This option sets the number of barcodes that must be present within the ROI so that the tool passes.
  - b. If desired, expand Individual Barcodes and select the Data Compare checkbox to enable the test parameter. Press Teach to save a barcode from the current results as the data to be compared against.



# Match Tool Demo

NOTE: Due to the highly reflective eraser targets, this Match lab works best with the supplied ring light Off. To turn the supplied ring light on, select the  from Tools & Results and from the Inputs tab expand External Strobe. The Strobe Type should be Active Low and the Mode should be Always Off.

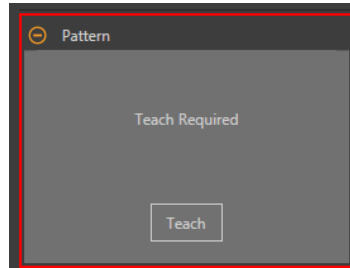
1. Add  Match tool to the inspection.

NOTE: The inspection fails and a warning displays until the reference pattern is taught.

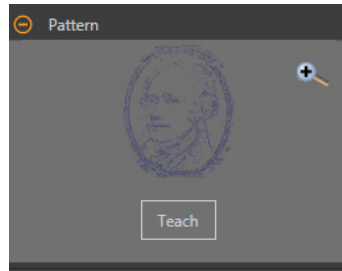
2. Adjust the Teach ROI to frame the feature to be used as the reference pattern. In this case, the feature is the money eraser.
  - a. Expand Teach ROI and select the ellipse.
  - b. Resize and rotate the ROI, centering on the president's face.
3. Adjust the Search ROI to fill the FOV.



4. On the Parameters pane, expand Pattern and click Teach.

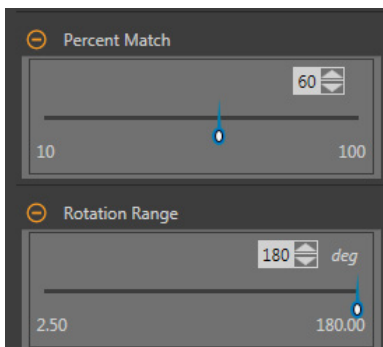


5. *Applying Changes* displays, and then the reference pattern displays in the Pattern pane and the Tools & Results tab and the All Results tab display one match.

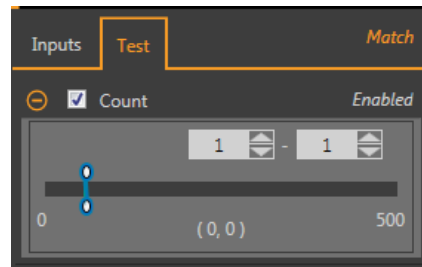


6. Expand Percent Match and change as is desired, for this application the default of 60% is adequate.
7. Expand Rotation Range and set it to 180. The found pattern can rotate rotate by plus or minus 180 degrees and still pass.

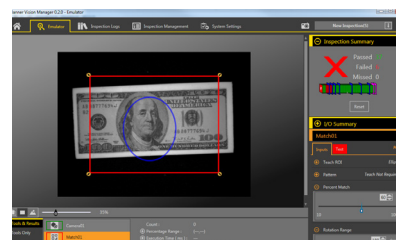
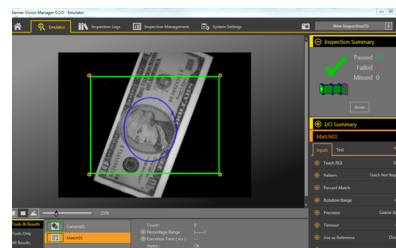
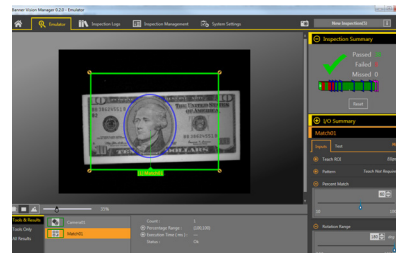
NOTE: Rotation Range and Percent Match work together. The higher the Percent Match, the lower the Rotation Range to pass.




8. On the Test tab, select the Count checkbox to enable the Count test parameter.
9. Expand Count and set it to a minimum of 1 and a maximum of 1. One and only one matching pattern must be found for the inspection to pass.




10. Test a complete range of good and bad samples to make sure that the sensor accepts good parts and rejects bad parts.



# Emulator Demo

The following lab is performed using the Vision Manger software in emulator mode. Connect to the emulator from Emulators on the  screen.

For best result, turn the Internal Trigger Rate to 2000 ms. To turn adjust the trigger rate, select the  from Tools & Results and from the Inputs Tab expand Trigger. The Trigger Mode should be set to Internal and the Trigger Rate can be adjusted.

1. Add  Match tool to the inspection.

NOTE: The inspection fails and a warning displays until the reference pattern is taught.

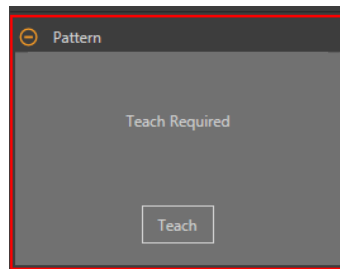
2. Adjust the Teach ROI to frame the feature to be used as the reference pattern. In this case, the feature is the Banner logo.

- a. Expand Teach ROI and select the ellipse.
- b. Resize and rotate the ROI around the Banner logo.

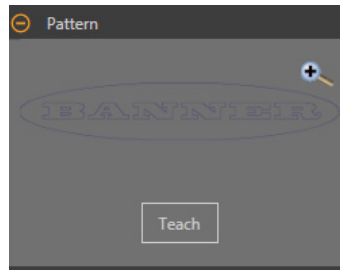
3. Adjust the Search ROI to fill the FOV.



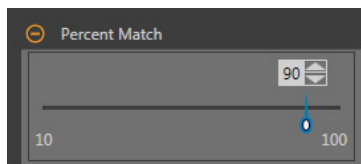
4. On the Parameters pane, expand Pattern and click Teach.



5. Applying Changes displays, and then the reference pattern displays in the Pattern pane and the Tools & Results tab and the All Results tab display one match.

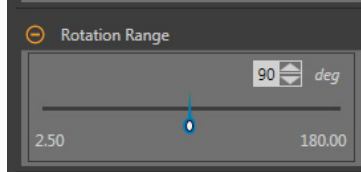


6. Expand Percent Match and change it to 90%. The found pattern must closely match the taught reference pattern.



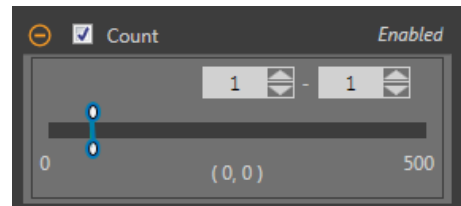
7. Expand Rotation Range and set it to 90.

The found pattern can rotate by plus or minus 90 degrees and still pass.



NOTE: Rotation Range and Percent Match work together. The higher the Percent Match, the lower the Rotation Range to pass. In this example a 99% match fails a missing letter but passes a match that is rotated 45 degrees.

8. On the Test tab, select the Count checkbox to enable the Count test parameter.
9. Expand Count and set it to a minimum of 1 and a maximum of 1. One and only one matching pattern must be found for the inspection to pass.



10. Test a complete range of good and bad samples to make sure that the sensor accepts good parts and rejects bad parts.

