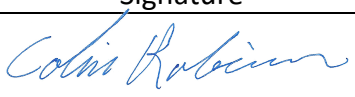
Document Introduction and Revision Approval

Title of Document: ISO 10360 Verification Procedure Swift and Swift Pro with M3

Document Number (if Applicable) MET-VP-SPD002

Brief Description of change: New Document Submission

Approval Signatures:

	Title	Name	Signature	Date
Author:	Manager	Colin Robinson		07/09/2021
Reviewed By:	Engineer	Tom Eliason		07/09/2021
Manager Approval: (*Production, Metrology, Quality, Sales or GM*)	Manager	Colin Robinson		07/09/2021

AMENDMENT RECORD SHEET

Date or previous Revision No.	Change requested by:	Date Released:
Ver. 001	Kalpesh Maniar	07/12/2021

Vision ENGINEERING

Document ID	MET-VP-SPD002
Version #	001
Effective Date	07/12/2021
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ISO 10360 Verification Procedure

Swift Pro with M3

As Found and As Left 10360 Verification Procedure

This procedure requires the use of the Pyser Glass Scale and follows ISO-10360 Part 7 - 2011, Section 6.2.5.

1. Sign in to M3 as Supervisor – Password 011009
    a. Click on M3 icon + “Shift” key
    b. If already in M3, then the logout icon (bottom left from the pop-up window), and log back in as the supervisor.

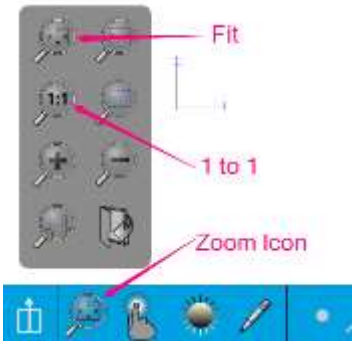
2. Make sure system units is set to “mm” and resolution to “0.0001”
    a. Go to M3>Settings>Display Formats>**Current inch/mm** “mm” Go to M3>Settings>Display Formats>**Display resolution for mm** “0.0001” > Press “Done” twice to return to M3 live Video

3. Set up the thermometer close to the machine. Make a note of the Temp and Humidity. Ideal temperature approx. 20 °C / 68.0 °F and Humidity 50%

4. Place the 5X objective lens into the machine and ensure its setup in M3. If not add the objective and perform pixel calibration.

5. Using a soft lint free cloth, clean the Stage and glass calibration scale/rule.

6. Set the view to Fit the screen. In the M3 software, click on the zoom icon and then click on the Fit icon.



10360 Verification requires 5 different measurements, 3 times each, in 4 different locations yielding total of 60 measurements. The 4 different locations of the measuring scale are parallel to the X axes, parallel to the Y axes, perpendicular to the X and Y axes from top left to bottom right, and perpendicular to the X and Y axes from bottom left to top right. See table 1 & 2 below.

Scale Position	Length 1	Length 2	Length 3	Length 4	Length 5
Parallel to X	20 mm circle	40 mm circle	80 mm circle	120 mm circle	160 mm circle
Parallel to Y	20 mm circle	40 mm circle	50 mm circle	60 mm circle	80 mm circle
Perpendicular to X & Y	20 mm circle	60 mm circle	100 mm circle	140 mm circle	180 mm circle

Table 1 200mm X 100mm Stage

Scale Position	Length 1	Length 2	Length 3	Length 4	Length 5
Parallel to X	20 mm circle	40 mm circle	80 mm circle	120 mm circle	140 mm circle
Parallel to Y	20 mm circle	40 mm circle	50 mm circle	60 mm circle	80 mm circle
Perpendicular to X & Y	20 mm circle	60 mm circle	100 mm circle	140 mm circle	160 mm circle

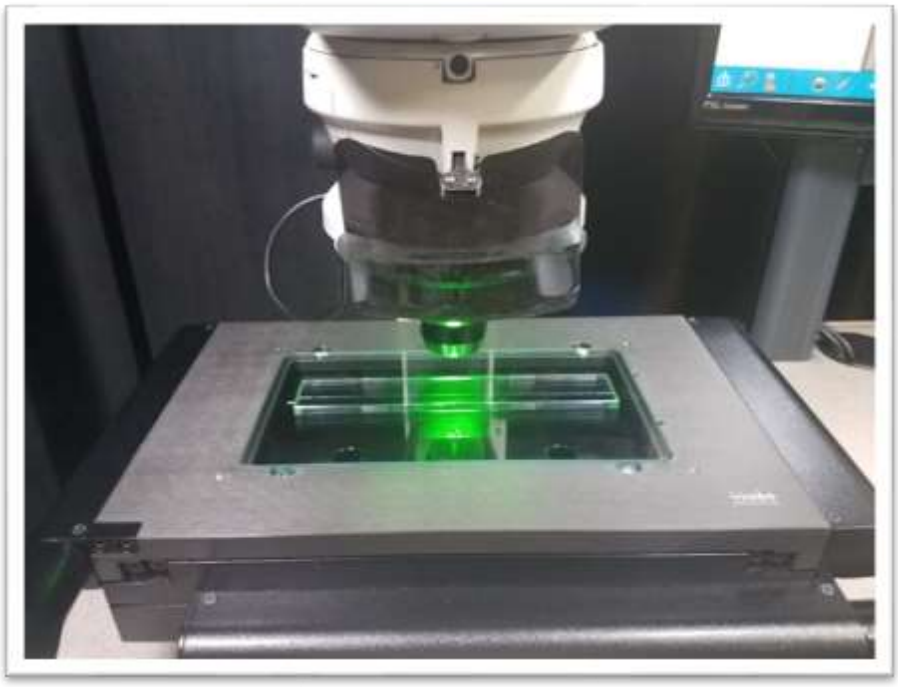
Table 2 150mm X 100mm Stage

Parallel to the X - Axes of the machine

7. On a **200mm X 100mm Stage**, position the glass calibration scale so that it is parallel to the **X -axes** of the machine. The zero circle needs to be on the left-hand side of the stage and making sure you can drive the X axes and reach both the zero circle and 160 mm circle for measuring.
   (Use hot glue / putty to avoid any shift)

8. ***(Follow the same instructions as for 200m x 100mm Stage as explained below and Table 2)***

   On a **150mm X 100mm Stage**, position the glass calibration scale so that it is parallel to the X -axes of the machine. The zero circle needs to be on the left-hand side of the stage and you can drive the axes and reach both the zero circle and 140 mm circle for measuring. (Use hot glue / putty to avoid any shift)



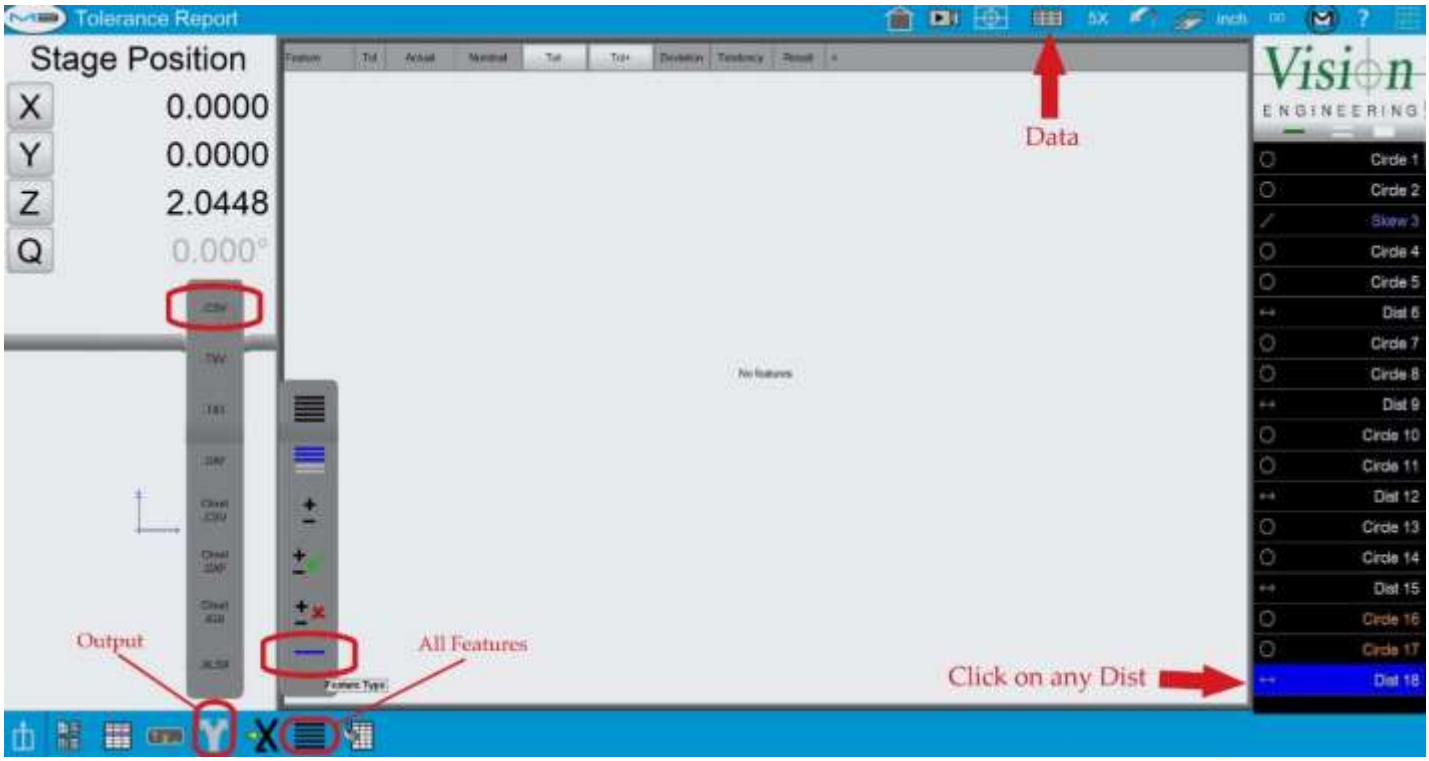
(200mm x 100mm Stage)

9. Length 1 - Measure the zero circle and the length 1 circle on the glass scale and construct a distance between the two circles.

10. Repeat step 10 for Length 2, 3, 4, and 5.

11. Repeat steps 10 and 11 two more times to have three runs with a total of 15 distance measurements

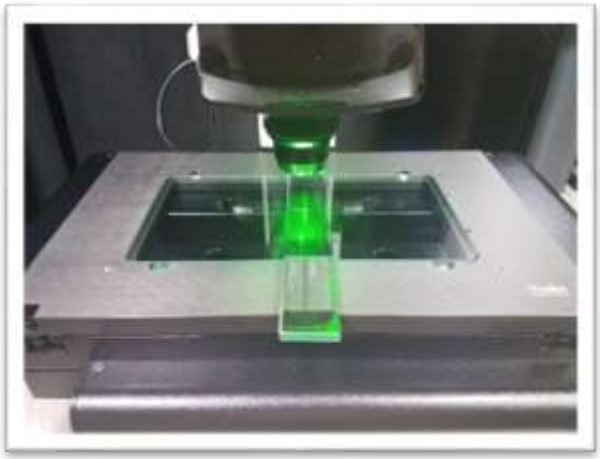
12. After finishing measuring all 5 lengths along X-axis. Save and Export the 15 distance measurements
    a. On feature panel click and highlight on any ***Dist***
    b. Click on **Data** icon on top
    c. Select **All** feature icon from bottom and select **Feature type** last one
    d. Click on Output icon from bottom and select .CSV
    e. Enter File name as "***X Verification.csv"***
    f. Click Done to export the file



Parallel to the Y - Axes of the machine

13. Click on the M3 icon, and then the new part icon. Click yes to clearing features and skews.

14. Reposition the glass calibration scale so that it is parallel to the **Y-axes** of the machine. The zero circle needs to be on the Top side of the stage and making sure you can drive the Y axes and reach both the zero circle and 80 mm circle for measuring. ***(Use hot glue / putty to avoid any shift)***



15. Length 1 - Measure the zero circle and the length 1 circle on the glass scale and construct a distance between the two circles.

16. Repeat step 16 for Length 2, 3, 4, and 5.

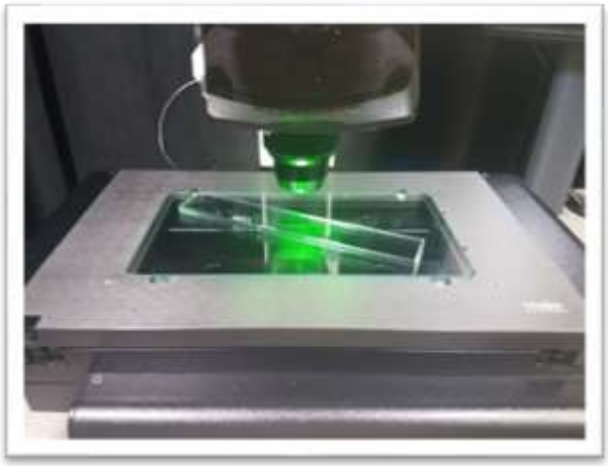
17. Repeat steps 16 and 17 two more times to have three runs with a total of 15 distance measurements

18. After finishing measuring all 5 lengths along X-axis. Save and Export the 15 distance measurements
    a. On feature panel click and highlight on any ***Dist***
    b. Click on **Data** icon on top
    c. Select **All** feature icon from bottom and select **Feature type** last one from the list
    d. Click on Output icon from bottom and select .CSV
    e. Enter File name as "***Y Verification.csv"***
    f. Click Done to export the file

Perpendicular to the XY - Axes of the machine

19. Click on the M3 icon, and then the new part icon. Click yes to clearing features and skews.

20. Reposition the glass scale so that it is **perpendicular to the X and Y** axes with the zero circle in the top left corner of the stage, and the 180 mm circle is in the bottom right corner. Check that both the zero circle and 180 mm circle are within the travel range of the stage. See picture below.



21. Length 1 - Measure the zero circle and the length 1 circle on the glass scale and construct a distance between the two circles.
22. Repeat step 22 for Length 2, 3, 4, and 5.

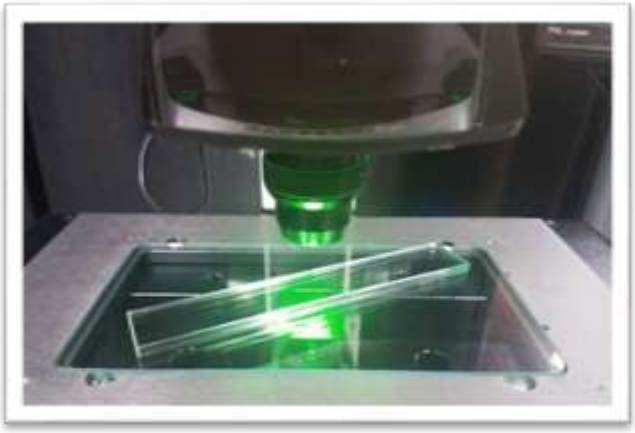
23. Repeat steps 22 and 23 two more times to have three runs with a total of 15 distance measurements

24. After finishing measuring all 5 lengths along X-axis. Save and Export the 15 distance measurements
    a. On feature panel click and highlight on any ***Dist***
    b. Click on **Data** icon on top
    c. Select **All** feature icon from bottom and select **Feature type** last one from the list
    d. Click on Output icon from bottom and select .CSV
    e. Enter File name as "***XY Verification.csv"***
    f. Click Done to export the file

Perpendicular to the YX - Axes of the machine

25. Click on the M3 icon, and then the new part icon. Click yes to clearing features and skews.

26. On a 200mm X 100mm stage: Reposition the glass scale so that it is **perpendicular to the Y and X** axes with the zero circle in the bottom left corner of the stage, and the 180 mm circle is in the top right corner. Check that both the zero circle and 180 mm circle are within the travel range of the stage.



27. Length 1 - Measure the zero circle and the length 1 circle on the glass scale and construct a distance between the two circles.

28. Repeat step 28 for Length 2, 3, 4, and 5.

29. Repeat steps 28 and 29 two more times to have three runs with a total of 15 distance measurements

30. After finishing measuring all 5 lengths along X-axis. Save and Export the 15 distance measurements
    a. On feature panel click and highlight on any ***Dist***
    b. Click on **Data** icon on top
    c. Select **All** feature icon from bottom and select **Feature type**
    d. Click on Output icon from bottom and select .CSV
    e. Enter File name as "***YX Verification.csv"***
    f. Click Done to export the file
31. Copy the exported measurements .CSV files from the follwoing location ***C:\Users\Public\Documents\MetLogix\Exports***

ISO-10360 Vision or Rebranded calibration certificate

32. **For Vision Engineering Certificate.**

33. Open up the latest version of ISO-10360 calibration certificate file in Excel.

34. Select "**Create New Certificate**"

35. In "Select Rule" form choose "***correct rule number"*** from the drop down

36. In "Scale Question" form select "**Scale**" or "**Diameter"**

37. Next select the correct "**Machine Type**" from the list

38. In "Other Information" form
    a. Select one that applies
    "***Certificates of Calibration***" or "***As Found***" or "***As Left***"

    b. If System is non functioning select
    "**As Found**" and Check on "Non Functioning Machine" underneath

    c. Technician name: requires **"*First and Last*" name**

    d. Stage Serial Number: Use the system serial number for example: 101555

    e. Customer ID: customer asset number if any

    f. Calibration Temperature: use the mean temperature from the min. and max. readings from the thermometer in either Farenheit or Celcius

    g. Enter Humidty %

    h. If all values are acceptable, OK button will be enabled

39. In Customer and Contact name form
    a. Company name is required and contact name if available.

    b. Enter Condition of item if its not in working condition

40. Next ISO 10360 Calibration Certificate will open in Excel with 3 worksheets “Front”, “Data” and “Chart”
    a. In “Front” and “Data” sheet confirm all the prefilled data are accurate

    b. Copy the measurement values from "X Verification.csv" and enter or paste as (values) into the Actual Values Colum (Column C) for test position 'X –'of the calibration certificate.

    c. Copy the measurement values from "Y Verification.csv" and enter or paste as (values) into the Actual Values Colum for test position 'Y –' of the calibration certificate.

    d. Copy the measurement values from "XY Verification.csv" and enter or paste as (values) into the Actual Values Colum for test position 'XY\ 'of the calibration certificate.

    e. Copy the measurement values from "YX Verification.csv" and enter or paste as (values) into the Actual Values Colum for test position 'YX/'of the calibration certificate.

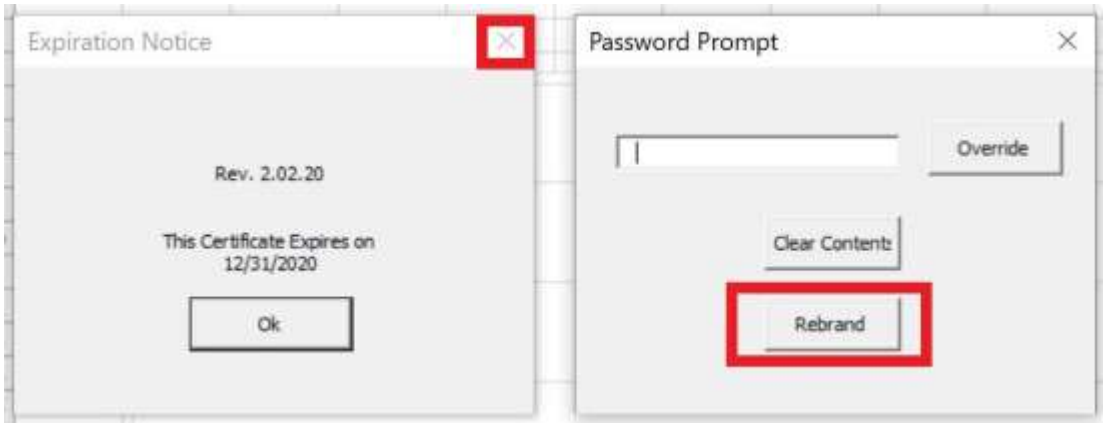
    f. If all values are within acceptable range you will see “PASS” next to all values

41. To Print the 10360 Cerificate, make sure to switch print settings from “Active sheet” to “Enire Workbook” and enter “Deviations if Any”

42. Print to a PDF file the calibration certificate front page, data page, chart. Sign the PDF file and name it by the stage serial number or camera serial number then "_As Left". For example: "101555_As Left.pdf".

For Private Branded Certificate.

- ❖ Click the “X” on the Expiration Notice after making sure its still valid.
- ❖ Click on Rebrand and upload Your Company Logo (logo will resize automatically)



- ❖ On Branding Form fill in your Company details. Company name is mandatory, rest of the fields are optional as needed. Click OK

- ❖ Confirm your company logo and other details as entered on the form are correct on “Front” and “Data” sheets.
- ❖ If no changes are needed, then save the file SaveAs in “(*.xlsm)” format.
- ❖ Close the file and reopen the saved file.
- ❖ Click OK on the Expiration Notice making sure its still valid.

43. Follow steps 35 - 43

End of Verification Procedure for Swift Pro