# Document Introduction and Revision Approval

Title of Document: ISO 10360 Verification Procedure Swift and Swift Pro Elite with ND122 & QC200

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**Approval Signatures:**

| | Title | Name | Signature | Date |
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**AMENDMENT RECORD SHEET**

| Date or previous Revision No. | Change requested by: | Date Released: |
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| Ver. 001 | Kalpesh Maniar | 05/15/2021 |
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# ISO 10360 Verification Procedure
# Swift & Swift Pro Elite
# with
# ND122 and QC200

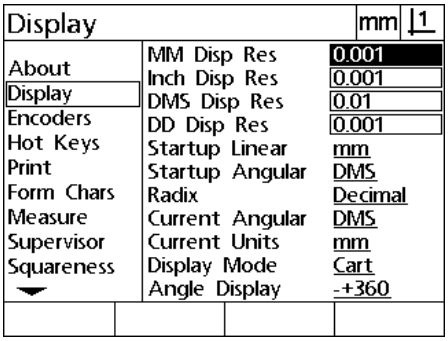
# As Found and As Left 10360 Verification Procedure

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

1. **Enter the supervisor password** – Password 070583


- Press the **MENU** key to display the menu soft keys.
- Press the **Setup** soft key to display the setup menu.
- Navigate up or down in the menu to highlight the Supervisor menu item using the **Up/Down Arrow** keys.
- Navigate from the menu to the Password setup field using the **Right Arrow** key.
- Enter the supervisor password **070583** using the numeric keypad.
- Press the **FINISH** key to save the password and return to the setup menu.
- Press the **FINISH** key to return to the DRO.

2. Make sure system units is set to “mm” and resolution to “0.0001”




- Press **MENU>Setup** to display the setup menu and then highlight the Display menu item.
- Highlight the **MM Disp** Res data field and change the display resolution index numbers from **0.001** to **0.0001**
- Press the **FINISH** key to return to the Setup menu.
- Press the **FINISH** key to return to the DRO.

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

4. Place the 5X objective lens into the machine.

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

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 Line | 40 mm Line | 80 mm Line | 120 mm Line | 160 mm Line |
| **Parallel to Y** | 20 mm Line | 40 mm Line | 50 mm Line | 60 mm Line | 80 mm Line |
| **Perpendicular to X & Y** | 20 mm Line | 60 mm Line | 100 mm Line | 140 mm Line | 180 mm Line |

*Table 1 200mm X 100mm Stage*

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

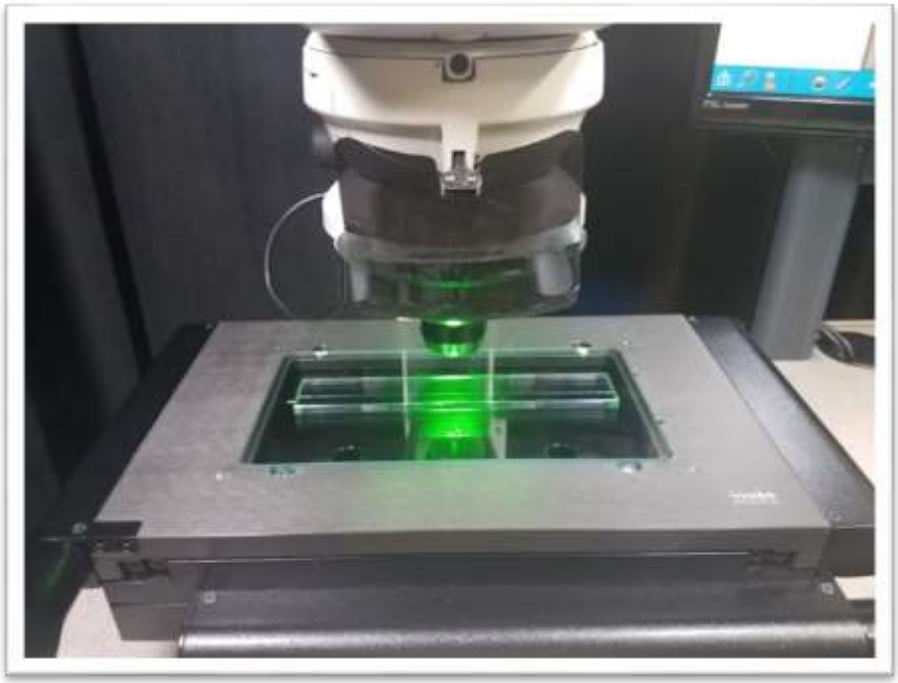
*Table 2 150mm X 100mm Stage*

## Parallel to the X - Axes of the machine

6. 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 Line 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 Line and 160 mm Line for measuring.
   ***(Use hot glue / putty to avoid any shift)***

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

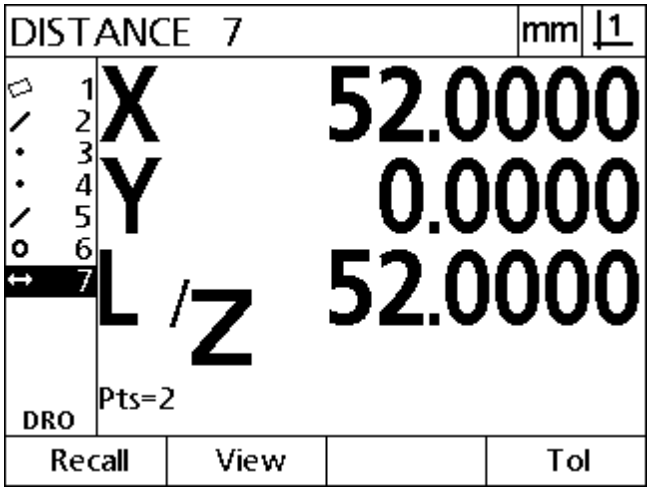
   On a **150mm X 100mm Stage**, position the glass calibration scale so that it is parallel to the X -axes of the machine. The zero Line needs to be on the left-hand side of the stage and you can drive the axes and reach both the zero Line and 140 mm Line for measuring. (Use hot glue / putty to avoid any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



**(200mm x 100mm Stage)**

7. Perform rule alignment **(Skew)**
   - Press the **Skew** key.
   - Move the stage to position the crosshairs center over the Bottom Right of the **Line 0** and press **Enter**
   - Move the stage along X axis to position the crosshair center over the Bottom Right of the Line 160 and press **Enter**
   - Press the FINISH key to complete measuring the skew line.

8. **Length 1** - Measure the zero Line and the length 1 Line on the glass scale and construct a distance between the two Lines.
   - Press the **Distance Measurement** key.
   - Move the stage to position the crosshairs center over the Bottom Right of the **Line 0** and press **Enter**
   - Move the stage along X axis to position the crosshair probe center over the Bottom Right of the Length 1 Line and press **Enter**
   - Press the **FINISH** key to complete measurement.
   - The Length 1 Distance feature will be added to the feature list. **Make a Note** of the distance.

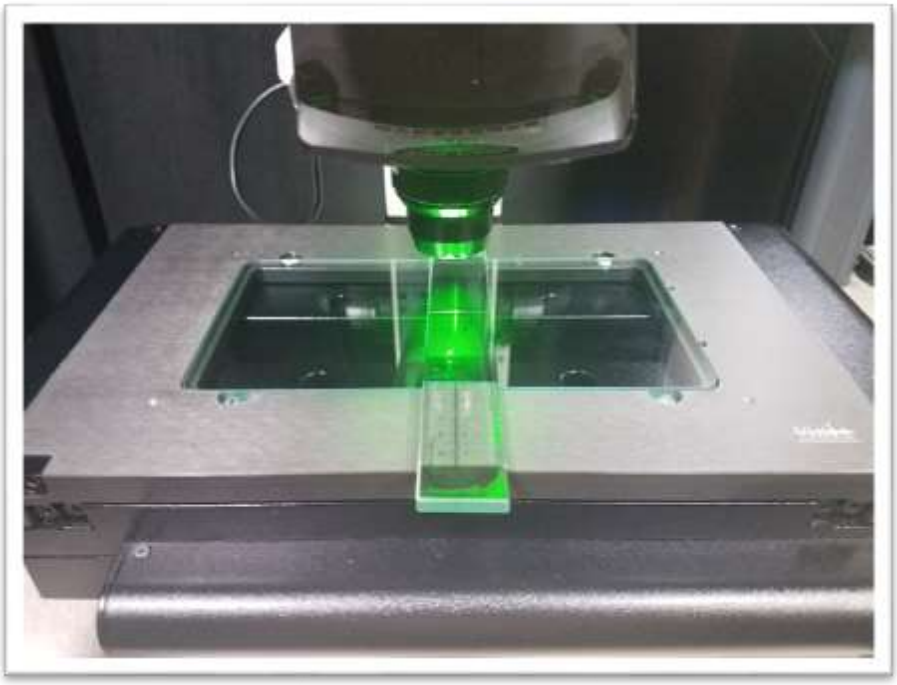



9. Repeat step 8 for **Length 2**, 3, 4, and 5.

10. Repeat steps 8 and 9 two more times to have three runs with a total of 15 distance measurements

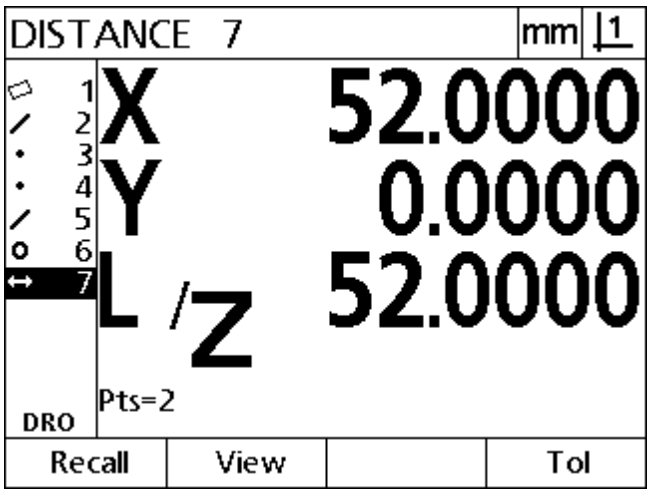
## Parallel to the Y - Axes of the machine

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



12. Perform rule alignment **(Skew)**
    - Press the **Skew** key.
    - Move the stage to position the crosshairs center over the Bottom Right of the **Line 0** and press **Enter**
    - Move the stage along Y axis to position the crosshair center over the Bottom Right of the Line 80 and press **Enter**
    - Press the FINISH key to complete measuring the skew line.

13. **Length 1** - Measure the zero Line and the length 1 Line on the glass scale and construct a distance between the two Lines.
    - Press the **Distance Measurement** key.
    - Move the stage to position the crosshairs center over the Bottom Right of the **Line 0** and press **Enter**
    - Move the stage along Y axis to position the crosshair probe center over the Bottom Right of the Length 1 Line and press **Enter**
    - Press the **FINISH** key to complete measurement.
    - The Length 1 Distance feature will be added to the feature list. **Make a Note** of the distance.

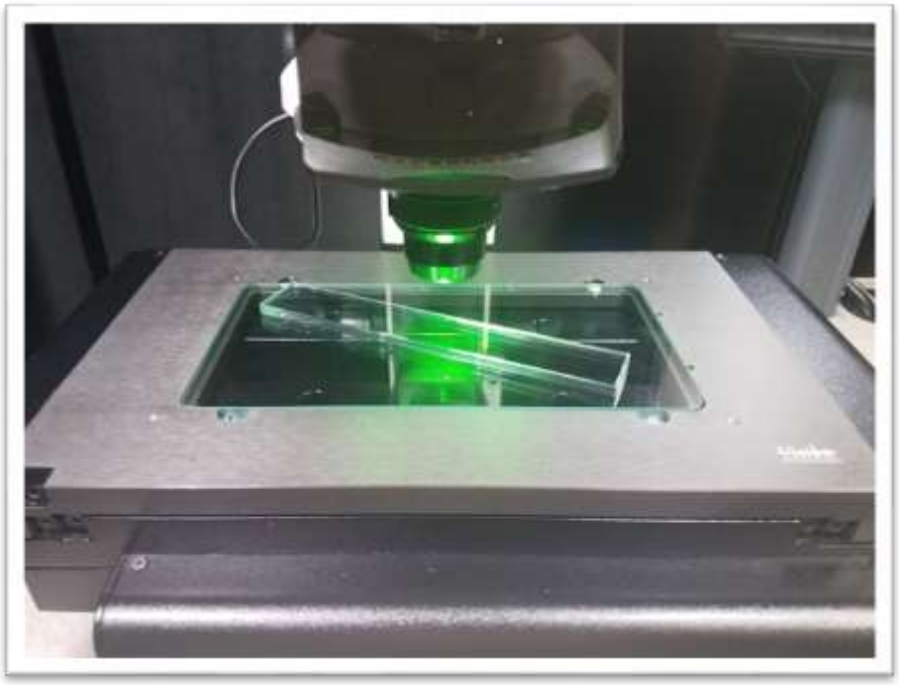



14. Repeat step 13 for **Length 2**, 3, 4, and 5.

15. Repeat steps 13 and 14 two more times to have three runs with a total of 15 distance measurements

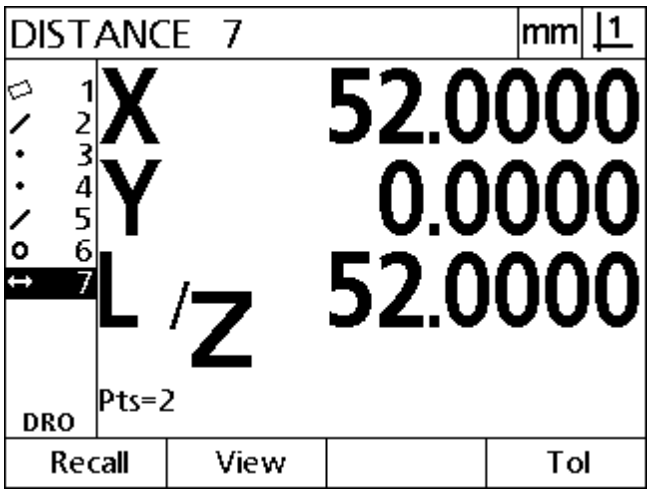
## Perpendicular to the XY - Axes of the machine

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



17. Perform rule alignment **(Skew)**
    - Press the **Skew** key.
    - Move the stage to position the crosshairs center over the Bottom Right of the **Line 0** and press **Enter**
    - Move the stage along XY axis to position the crosshair center over the Bottom Right of the Line 180 and press **Enter**
    - Press the FINISH key to complete measuring the skew line.

18. **Length 1** - Measure the zero Line and the length 1 Line on the glass scale and construct a distance between the two Lines.
    - Press the **Distance Measurement** key.
    - Move the stage to position the crosshairs center over the Bottom Right of the **Line 0** and press **Enter**
    - Move the stage along XY axis to position the crosshair probe center over the Bottom Right of the Length 1 Line and press **Enter**
    - Press the **FINISH** key to complete measurement.
    - The Length 1 Distance feature will be added to the feature list. **Make a Note** of the distance.

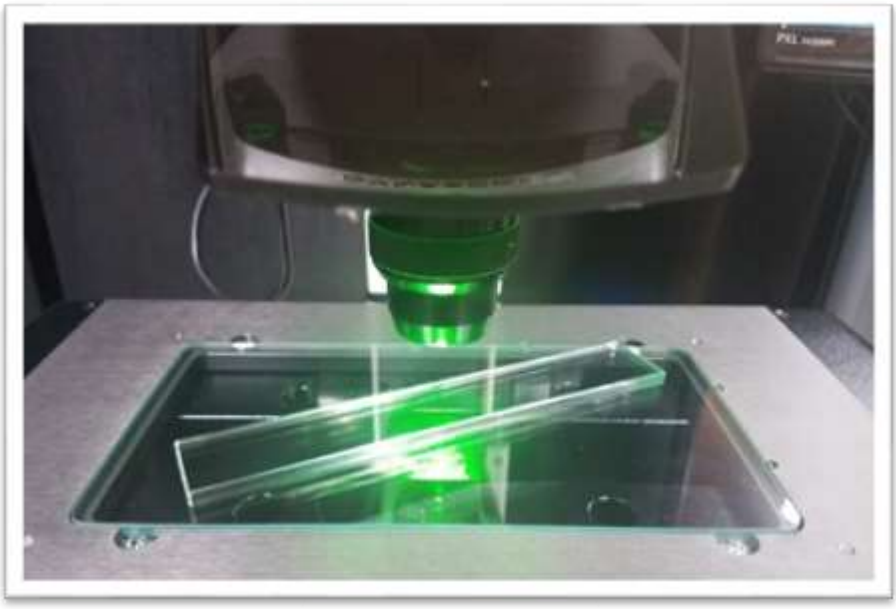



19. Repeat step 18 for **Length 2**, 3, 4, and 5.

20. Repeat steps 18 and 19 two more times to have three runs with a total of 15 distance measurements

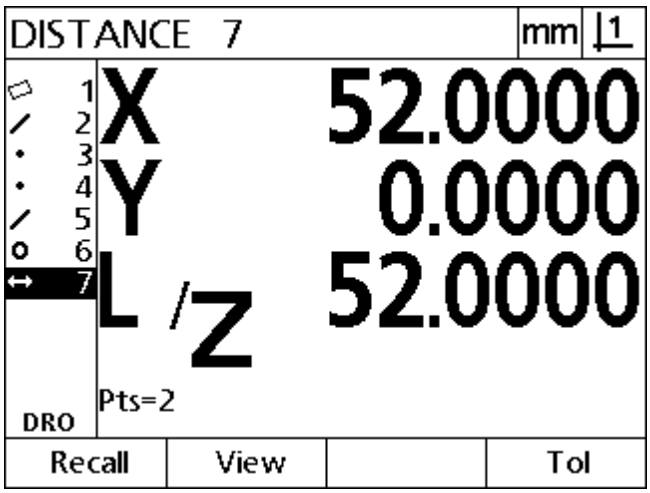
## Perpendicular to the YX - Axes of the machine

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



22. Perform rule alignment **(Skew)**
    - Press the **Skew** key.
    - Move the stage to position the crosshairs center over the Bottom Right of the **Line 0** and press **Enter**
    - Move the stage along XY axis to position the crosshair center over the Bottom Right of the Line 180 and press **Enter**
    - Press the FINISH key to complete measuring the skew line.

23. **Length 1** - Measure the zero Line and the length 1 Line on the glass scale and construct a distance between the two Lines.
    - Press the **Distance Measurement** key.
    - Move the stage to position the crosshairs center over the Bottom Right of the **Line 0** and press **Enter**
    - Move the stage along XY axis to position the crosshair probe center over the Bottom Right of the Length 1 Line and press **Enter**
    - Press the **FINISH** key to complete measurement.
    - The Length 1 Distance feature will be added to the feature list. **Make a Note** of the distance.




24. Repeat step 23 for **Length 2**, 3, 4, and 5.

25. Repeat steps 23 and 24 two more times to have three runs with a total of 15 distance measurements

# ISO-10360 Verification Certificate

26. Open the ISO-10360 Verification Certificate file in Excel.

27. Make sure all the required fields are populated on the Verification form.

28. Enter the scale certified values and the saved test position measurement values for ‘X” , “Y”, “XY\” and “YX/” into the Actual Values
(If using **Copy and Paste** from CSV file, make sure you paste “**Values**” only)

29. If the Actual deviation values are within the allowable range, it is a **Pass** or else **Fail**.

## End of  Verification  Procedure for Swift Pro with ND122 / QC200