

EZSLAMX

Training Program



CHAPTER 4

Session Details and Reporting



STS104, Slide 1

Property of EZ Metrology © 2021. All rights reserved.

1

Session Details and Reporting

- A. Identification
- B. Configuration
- C. Geometry
- D. Sensor Check
- E. Runs
- F. Common Errors
- G. Results
- H. Reporting



STS104, Slide 2

Property of EZ Metrology © 2021. All rights reserved.

2

A. Identification



STS104, Slide 3

Property of EZ Metrology © 2021. All rights reserved.

3

A. Identification

1. Fields

Creating A New Session

Select the <Measure> Access Tab and click [New].

Information

The session must have sufficient information to generate a unique name.

The fields can be used to provide specific information to recognize the session in the collection of all sessions.

The 'Name' is auto generated based on the completed fields:

Note

Special characters are not allowed in these fields.

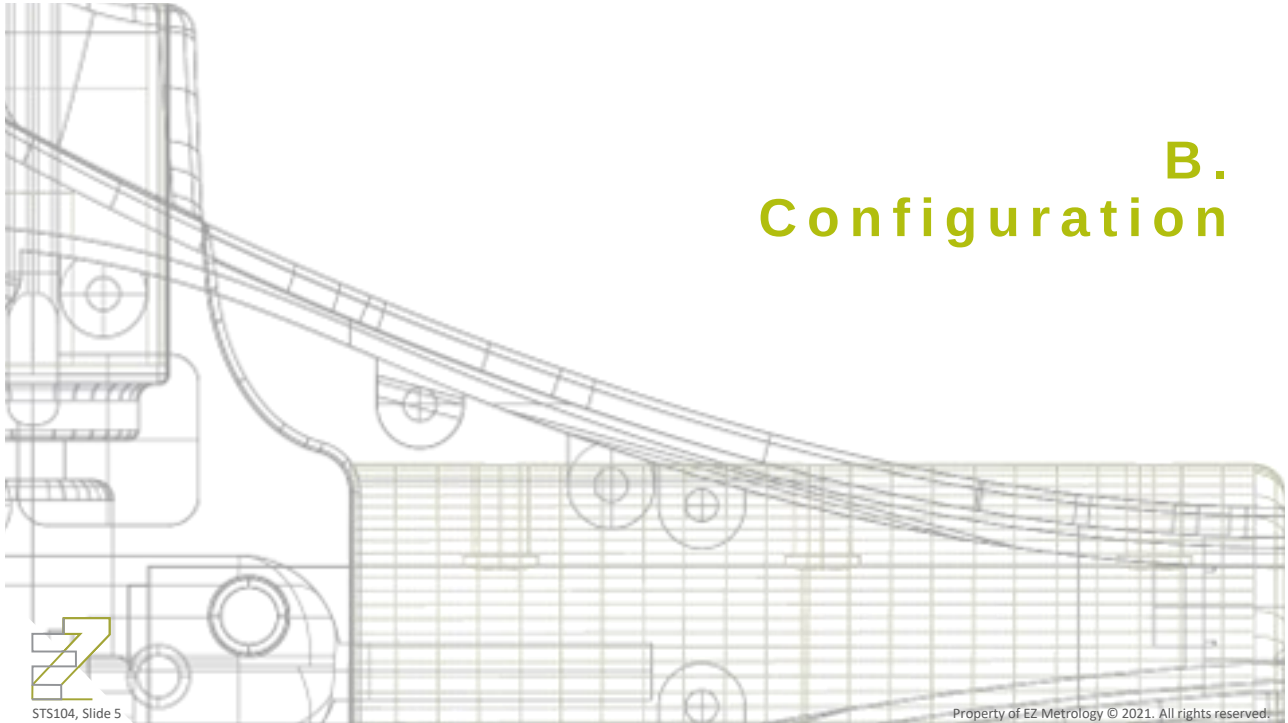


STS104, Slide 4

Property of EZ Metrology © 2021. All rights reserved.

4

B. Configuration



5

B. Configuration

1. Fields

Door Profile

Relevant parameters, test minimums and precision thresholds that can be attributed to a specific door type. Each profile is assigned a profile code. Profiles can be created in Settings or by selecting Edit next to the drop-down menu in the B – Configuration tab.

Convention Profile

Rules and guidelines that will be applied when processing data. Each Profile is assigned a Convention Code. Convention profiles can be created in Settings or by selecting Edit next to the drop-down menu in the B – Configuration tab.

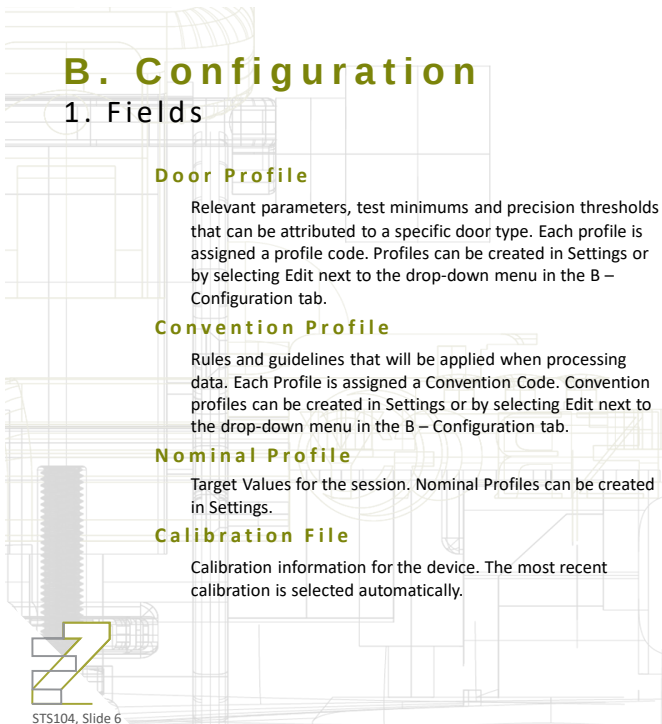
Nominal Profile

Target Values for the session. Nominal Profiles can be created in Settings.

Calibration File

Calibration information for the device. The most recent calibration is selected automatically.

B - Configuration	
Door Profile Name	DoorA Edit
Door Profile Code	0-0-0
Convention Profile Name	ConvB Edit
Convention Profile Code	69FBE32-189E7C-N
Nominal Profile Name	IsdA Use Nominal Comparison
EZSlam Serial Number	9455
Calibration File Name	CAL_9455_200127 Reset Apply



6

Property of EZ Metrology © 2021. All rights reserved.

C. Geometry



7

C. Geometry

1. Optional Door Profile Geometry

Source

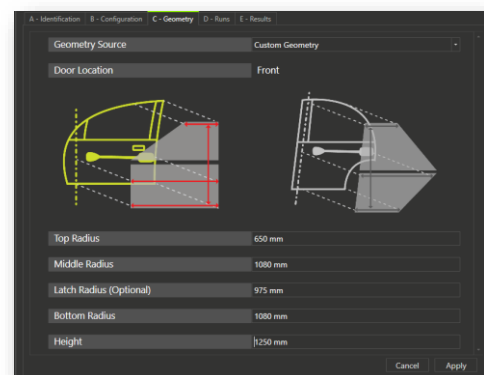
Custom details can be edited in the Session window in the C – Geometry tab or loaded from the selected door profile.

Weight Distribution

The software will also use the geometry to calculate the distribution of weight around the hinge.

Latch Radius

The latch radius can be entered to calculate the speed at the latch radius (conventions).



Property of EZ Metrology © 2021. All rights reserved.

8

C. Geometry

2. Optional Custom Geometry

Measure

Tape measure can be used to define the gray area shown.

Middle Radius

Distance from hinge to hem edge of door.

Top Radius

Generally measured as the edge of the B-pillar to where the roof and windshield meet.

Bottom Radius

Distance from bottom of door directly below the hinge to hem edge.



STS104, Slide 9

Geometry Source	Custom Geometry
Door Location	Front
Top Radius	640 mm
Middle Radius	1007 mm
Latch Radius (Optional)	960 mm
Bottom Radius	1007 mm
Height	1250 mm

Cancel Apply

Property of EZ Metrology © 2021. All rights reserved.

9

D. Sensor Check



STS104, Slide 10

Property of EZ Metrology © 2021. All rights reserved.

10

D. Sensor Check

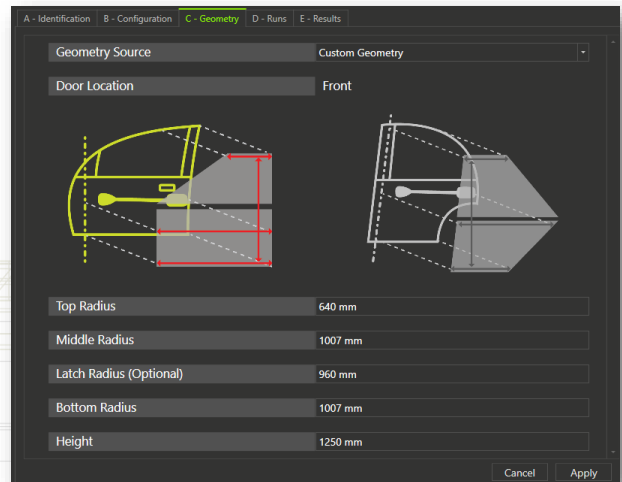
1. Force

Measure

Use a dynamometer to measure the latching force of the door.

Compare

Compare dynamometer reading to EZSlam to check sensor function.



Property of EZ Metrology © 2021. All rights reserved.

11

D. Sensor Check

2. Sweep Angle

Radius

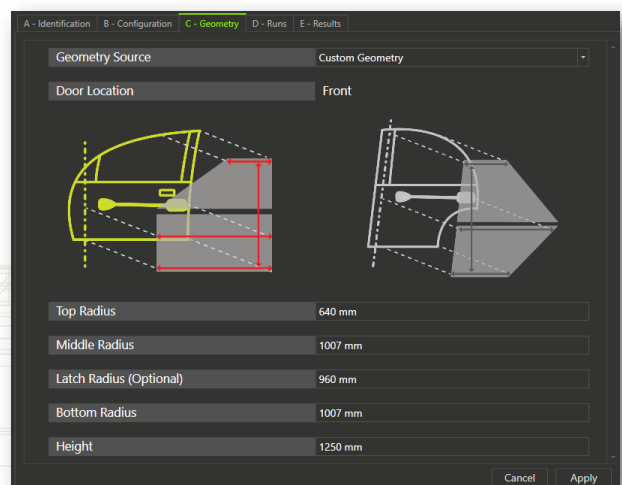
Use a tape measure the distance from hem edge to hinge.

Chord Length

Using a tape measure, measure the distance from the hem edge of the door, fully open, to where it meets the body of the vehicle.

Compare

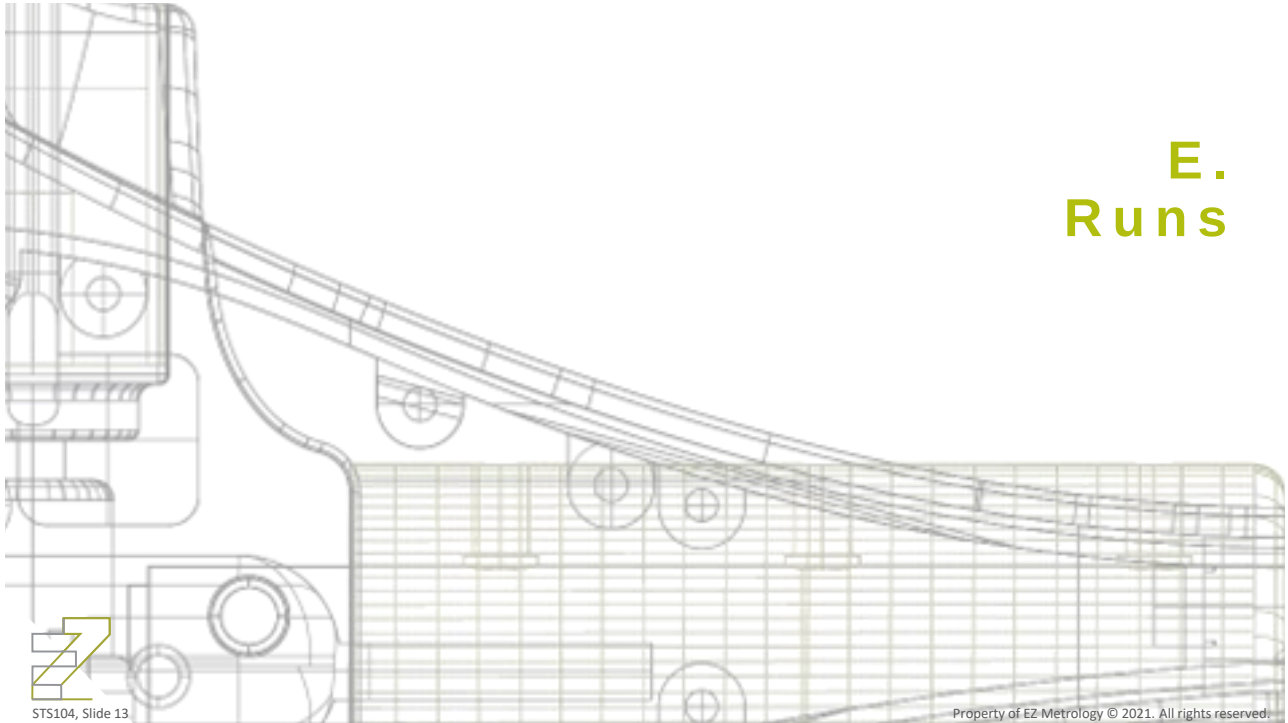
These measurements are used to calculate sweep angle and can be compared to the software's analysis.



Property of EZ Metrology © 2021. All rights reserved.

12

E. Runs



13

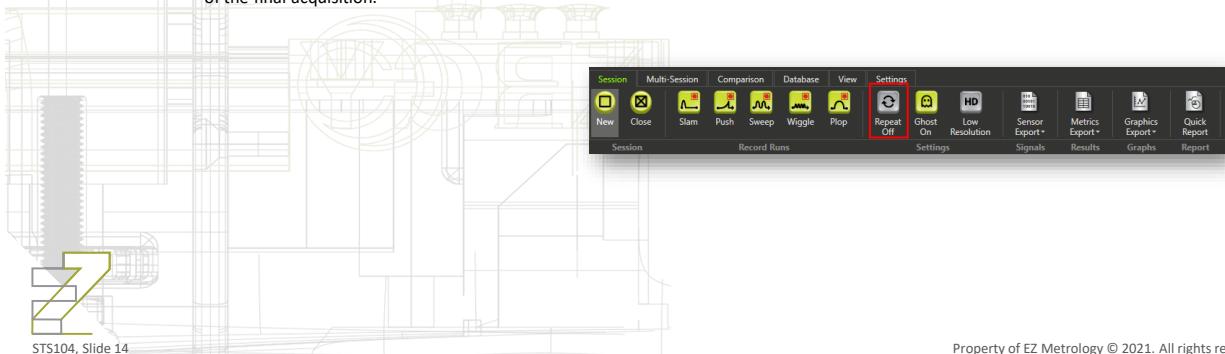
E. Runs

1. Repeat Toggle

Repeat On

Allows the user to take multiple runs of the same type without returning to the Main Window.

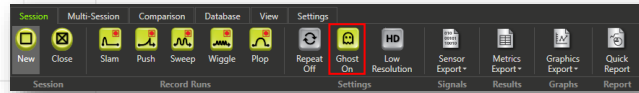
Runs are taken in succession and processed together at the end of the final acquisition.



14

E. Runs

2. Ghost Toggle



Ghost On

A comparison session, or "Ghost", can be selected to compare against. When enabled, the Ghost Toggle icon shows green.

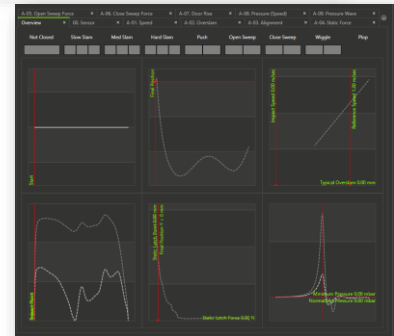
Selection

Use the radio buttons in the Ghost column of the Database window to select the Ghost session.

Selected	Processed	End	Date	Name	Door Profile	Conversion	Minimum Closing Speed	Version
			2019 02 20	Sample 1_X_123_P1_2 Detent Calc...	Detent	Canva	1.12	1.0.7.28
			2019 02 20	Sample 2_X_123_P1_2 Detent Calc...	Detent	Canva	1.12	1.0.7.28
			2019 02 14	Sample 3_X_X_P1_1 Detent Calc...	Detent	Canva	0.89	1.0.7.28
			2019 12 15	Sample 4_X_X_P1_1 Detent Calc...	Detent	Canva	0.82	1.0.7.28
			2019 12 12	Sample 5_X_X_P1_2 Detent Calc...	Detent	Canva	0.89	1.0.7.28
			2020 06 30	Sample 6_X_X_P1_1 Detent Calc...	Detent	Canva	0.70	1.0.7.28
			2020 10 05	Sample 7_X_X_P1_1 Detent Calc...	Detent	Canva	0.70	1.0.7.28

Graphs

Ghost session data is displayed in gray.

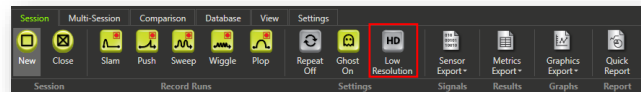


Property of EZ Metrology © 2021. All rights reserved.

15

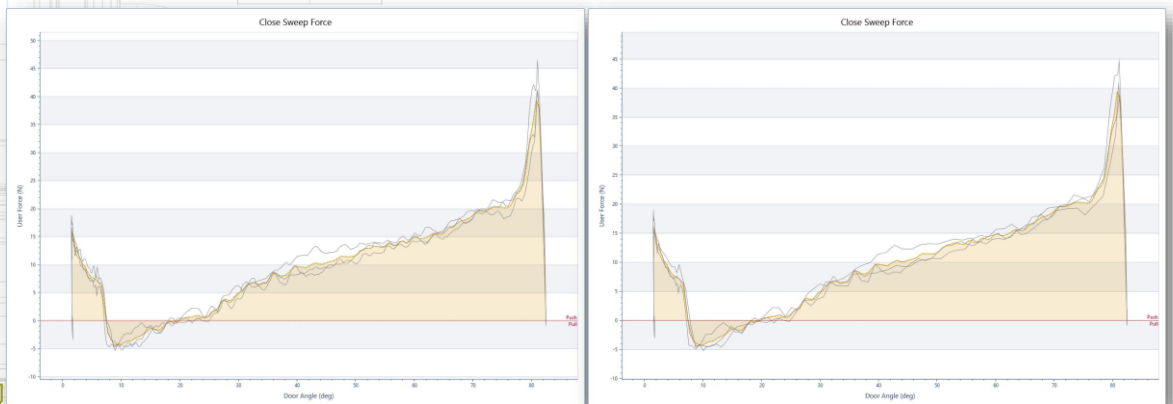
E. Runs

3. Resolution Toggle



Low Resolution

For faster operation, the graphical resolution can be reduced. The measurement accuracy is not influenced. The button will show green when enabled.



Property of EZ Metrology © 2021. All rights reserved.

16

E. Runs

4. Overview

Sorting

Runs are listed in the order in which they were taken by default. They can be sorted by clicking on the desired column title.

Grouping

Drag a column header to the sorting fields to group the runs by that column.

Import Runs

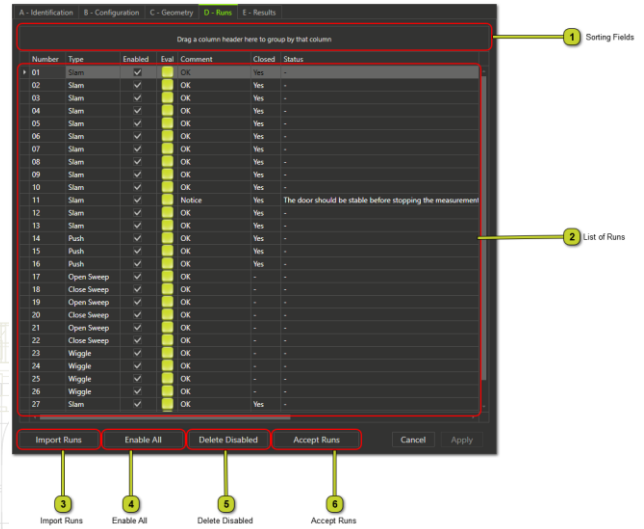
Runs from another session can be imported with the Import Runs button at the bottom of the tab.

Enable All

Enables all runs except those automatically disabled by the software.

Delete Disabled

Permanently deletes disabled runs from the session.



Property of EZ Metrology © 2021. All rights reserved.

17

E. Runs

5. Eval

Color Code

Each Run is evaluated with a color-coded status:



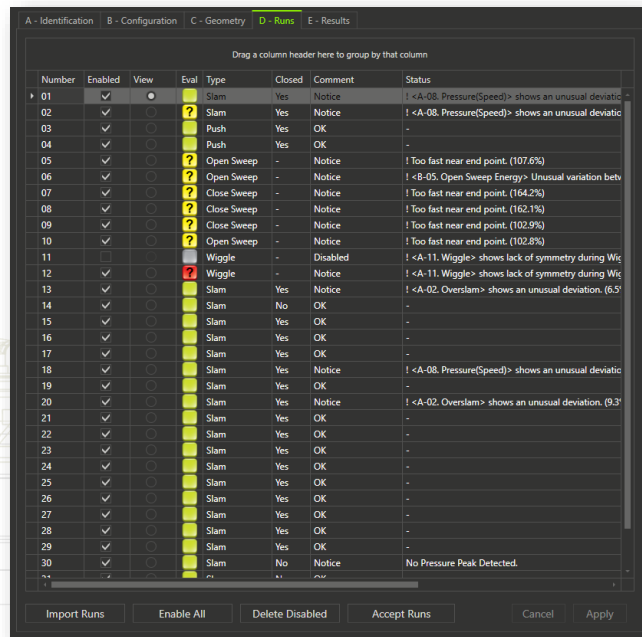
This coding system informs the user of the status of the run and whether further analysis/action is required.

Comment

The Comment column gives a quick description of the status of the run, e.g., "OK", "Notice", or "Disabled".

Status

The status column gives detailed information about any inconsistencies or errors.



Property of EZ Metrology © 2021. All rights reserved.

18

E. Runs

6. Green Runs

Good Runs

Good runs are marked 

These runs have been accepted by the software and the session can be continued as normal.

Drag a column header here to group by that column

Number	Enabled	View	Eval	Type	Closed	Comment	Status
01	✓	●	?	Slam	Yes	Notice	! <A-08, Pressure(Speed)> shows an unusual deviat
02	✓	○	?	Slam	Yes	Notice	! <A-08, Pressure(Speed)> shows an unusual deviat
03	✓	○	?	Push	Yes	OK	-
04	✓	○	?	Push	Yes	OK	-
05	✓	○	?	Open Sweep	-	Notice	! Too fast near end point, (107.6%)
06	✓	○	?	Open Sweep	-	Notice	! <B-05, Open Sweep Energy> Unusual variation betw
07	✓	○	?	Close Sweep	-	Notice	! Too fast near end point, (164.2%)
08	✓	○	?	Close Sweep	-	Notice	! Too fast near end point, (162.1%)
09	✓	○	?	Close Sweep	-	Notice	! Too fast near end point, (102.9%)
10	✓	○	?	Open Sweep	-	Notice	! Too fast near end point, (102.8%)
11	✓	○	?	Wiggle	-	Disabled	! <A-11, Wiggle> shows lack of symmetry during Wig
12	✓	○	?	Wiggle	-	Notice	! <A-11, Wiggle> shows lack of symmetry during Wig
13	✓	○	?	Slam	Yes	Notice	! <A-02, Overslam> shows an unusual deviation, (6.5'
14	✓	○	?	Slam	No	OK	-
15	✓	○	?	Slam	Yes	OK	-
16	✓	○	?	Slam	Yes	OK	-
17	✓	○	?	Slam	Yes	OK	-
18	✓	○	?	Slam	Yes	Notice	! <A-08, Pressure(Speed)> shows an unusual deviat
19	✓	○	?	Slam	Yes	OK	-
20	✓	○	?	Slam	Yes	Notice	! <A-02, Overslam> shows an unusual deviation, (9.3'
21	✓	○	?	Slam	Yes	OK	-
22	✓	○	?	Slam	Yes	OK	-
23	✓	○	?	Slam	Yes	OK	-
24	✓	○	?	Slam	Yes	OK	-
25	✓	○	?	Slam	Yes	OK	-
26	✓	○	?	Slam	Yes	OK	-
27	✓	○	?	Slam	Yes	OK	-
28	✓	○	?	Slam	Yes	OK	-
29	✓	○	?	Slam	Yes	OK	-
30	✓	○	?	Slam	No	Notice	No Pressure Peak Detected.

Import Runs Enable All Delete Disabled Accept Runs Cancel Apply

Property of EZ Metrology © 2021. All rights reserved.

19

E. Runs

7. Yellow Runs

Notice

Runs that have minor inconsistencies are marked 

The data for this run should be examined and the user can decide whether the run is acceptable.

Comment

All yellow runs are labeled "Notice" in the Comment.

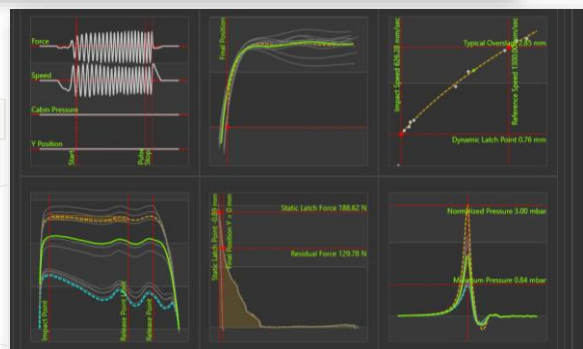
Status

The status column will reference the graphs or inconsistencies in question. Click on the View button next to the run to be examined to highlight the graph in green. Navigate to the referenced graph to examine the data.

Accept

If the data is acceptable, Click on Accept Runs at the bottom of the Runs tab to clear the question mark. The run will now be marked 

Number	Enabled	View	Eval	Type	Closed	Comment	Status
01	✓	●	?	Slam	Yes	Notice	! <A-08, Pressure(Speed)> shows an unusual deviat
02	✓	○	?	Slam	Yes	Notice	! <A-08, Pressure(Speed)> shows an unusual deviat
03	✓	○	?	Push	Yes	OK	-
04	✓	○	?	Push	Yes	OK	-
05	✓	○	?	Open Sweep	-	Notice	! Too fast near end point, (107.6%)
06	✓	○	?	Open Sweep	-	Notice	! <B-05, Open Sweep Energy> Unusual variation betw
07	✓	○	?	Close Sweep	-	Notice	! Too fast near end point, (164.2%)
08	✓	○	?	Close Sweep	-	Notice	! Too fast near end point, (162.1%)
09	✓	○	?	Close Sweep	-	Notice	! Too fast near end point, (102.9%)
10	✓	○	?	Open Sweep	-	Notice	! Too fast near end point, (102.8%)



Property of EZ Metrology © 2021. All rights reserved.

20

E. Runs

8. Red Runs

Warning

Runs that have major inconsistencies are marked .

The data for this run needs to be examined and the user can decide whether the run is acceptable.

Comment

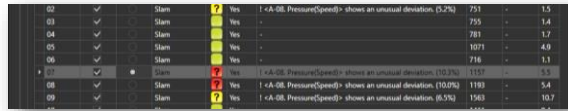
All red runs are labeled "Notice" in the Comment.

Status

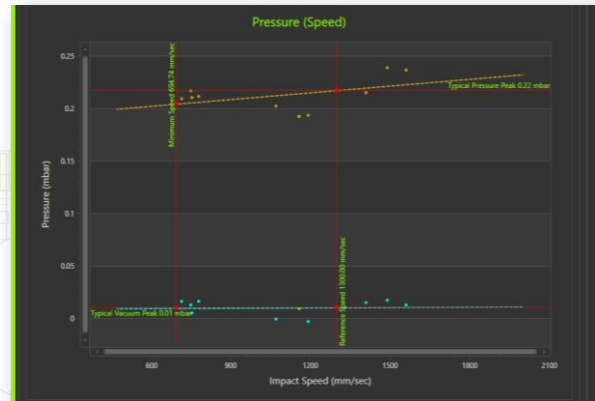
The status column will reference the graphs or inconsistencies in question. Click on the View button next to the run to be examined to highlight the associated graph in green. Navigate to the referenced graph to examine the data.

Accept

If the data is acceptable, Click on Accept Runs at the bottom of the Runs tab to clear the question mark. The run will now be marked .



Number	Enabled	View	Eval	Type	Closed	Comment	Status
02				Slam	Yes	! <A-08, Pressure(Speed)> shows an unusual deviation, (5.2%)	731 - 1.5
03				Slam	Yes	-	735 - 1.4
04				Slam	Yes	-	781 - 1.7
05				Slam	Yes	-	1071 - 4.0
06				Slam	Yes	-	718 - 1.1
07				Slam	Yes	! <A-08, Pressure(Speed)> shows an unusual deviation, (11.2%)	1112 - 1.3
08				Slam	Yes	! <A-08, Pressure(Speed)> shows an unusual deviation, (10.0%)	1180 - 5.4
09				Slam	Yes	! <A-08, Pressure(Speed)> shows an unusual deviation, (6.5%)	1563 - 10.7



Property of EZ Metrology © 2021. All rights reserved.

21

E. Runs

9. Gray Runs

Disabled Runs

Disabled runs are marked .

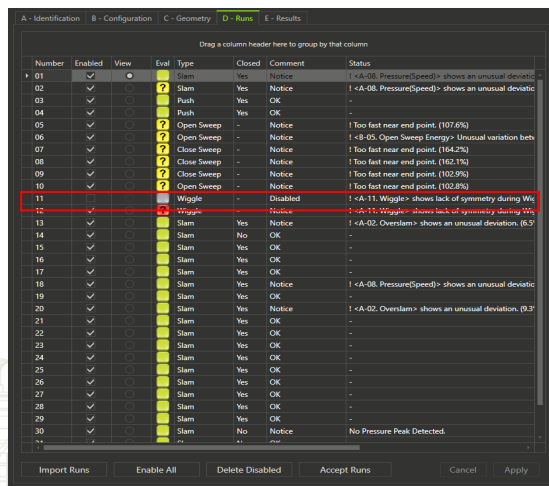
Runs may be automatically disabled by the software or manually disabled by the user.

Automatically Disabled

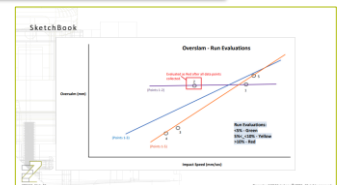
EZSlamX will automatically disable a run if it is not able to process the data collected during acquisition. The reasoning for disabling the run will be given in the Status column.

Manually Disabled

The user may disable one or more runs which are negatively impacting the results of the session by unchecking the Enabled box and clicking Apply.



Number	Enabled	View	Eval	Type	Closed	Comment	Status
01				Slam	Yes	! <A-08, Pressure(Speed)> shows an unusual deviation	-
02				Slam	Yes	! <A-08, Pressure(Speed)> shows an unusual deviation	-
03				Push	Yes	OK	-
04				Push	Yes	OK	-
05				Open Sweep	-	! Too fast near end point, (107.8%)	-
06				Open Sweep	-	! <B-05, Open Sweep Energy> Unusual variation bet	-
07				Close Sweep	-	! Too fast near end point, (164.2%)	-
08				Close Sweep	-	! Too fast near end point, (162.1%)	-
09				Close Sweep	-	! Too fast near end point, (102.9%)	-
10				Open Sweep	-	! Too fast near end point, (102.8%)	-
11				Wiggle	-	! <A-11, Wiggle> shows lack of symmetry during Wig	-
12				Wiggle	-	! <A-11, Wiggle> shows lack of symmetry during Wig	-
13				Slam	Yes	! <A-02, Overslam> shows an unusual deviation, (6.5)	-
14				Slam	No	OK	-
15				Slam	Yes	OK	-
16				Slam	Yes	OK	-
17				Slam	Yes	OK	-
18				Slam	Yes	Notice	-
19				Slam	Yes	! <A-08, Pressure(Speed)> shows an unusual deviation	-
20				Slam	Yes	! <A-02, Overslam> shows an unusual deviation, (0.3)	-
21				Slam	Yes	OK	-
22				Slam	Yes	OK	-
23				Slam	Yes	OK	-
24				Slam	Yes	OK	-
25				Slam	Yes	OK	-
26				Slam	Yes	OK	-
27				Slam	Yes	OK	-
28				Slam	Yes	OK	-
29				Slam	Yes	OK	-
30				Slam	No	Notice	No Pressure Peak Detected.



Property of EZ Metrology © 2021. All rights reserved.

22

F. Common Errors



STS104, Slide 23

Property of EZ Metrology © 2021. All rights reserved.

23

F. Common Errors

1. Universal Errors

The door should be stable before starting/stopping the measurement.

- Appears when the run is initiated before the timer starts.
- Appears when the run is ended before the system has come to rest.
- Be sure to wait until the 25s countdown has begun before starting measurement.



STS104, Slide 24

Property of EZ Metrology © 2021. All rights reserved.

24

F. Common Errors

1. Universal Errors

No Door/Cabin/Body Unit Present

- Check power and connection status of device listed and confirm it is on and connected.
- Use Detect to scan and reconnect to devices.
- Be sure base unit is within 2m of all devices.

STS104, Slide 25

Property of EZ Metrology © 2021. All rights reserved.

25

F. Common Errors

2. Slam

<A-08. Pressure(Speed)> Shows Large Deviation

Occurs frequently with < 5 slams or tightly grouped slams (e.g. all slow), more runs may be required.

If error persists after completing more slams, check graph A-08 for potential outliers.

Make sure current calibration is imported.

STS104, Slide 26

Property of EZ Metrology © 2021. All rights reserved.

26

F. Common Errors

2. Slam

No Pressure Peak Detected

- Cabin unit failed to record; confirm device is on and connected.
- Reset cabin unit.
- Use the 'Detect' function in Settings to rescan for available units.



STS104, Slide 27

Property of EZ Metrology © 2021. All rights reserved.

27

F. Common Errors

2. Slam

Position Signal Has No Laser Light

- Body Unit failed to record, or door unit lasers did not come on during acquisition. Confirm devices are on and connected.
- Reset door/cabin unit.
-
- Use the 'Detect' function in Settings to scan for available units.



STS104, Slide 28

Property of EZ Metrology © 2021. All rights reserved.

28

F. Common Errors

2. Slam

Body Unit has moved slightly During Impact

- Body unit has shifted positions. Confirm suction cup, flex arm, and red knob are locked to prevent movement.



Property of EZ Metrology © 2021. All rights reserved.

29

F. Common Errors

2. Slam

<C-11. User Force> Release point beyond its limit.

- User has applied force beyond the maximum allowed angle.

Property of EZ Metrology © 2021. All rights reserved.

30

F. Common Errors

3. Push

<A-04. Static Force> Unusual variation between runs.

- Check A-04 for large variation between runs. Disable any runs with outlier values.



STS104, Slide 31

Property of EZ Metrology © 2021. All rights reserved.

31

F. Common Errors

4. Sweep

Movement was too fast.

- Sweep motion during acquisition was too fast.
- Be sure to take the time to slowly move the door through the check system during acquisition.



STS104, Slide 32

Property of EZ Metrology © 2021. All rights reserved.

32

F. Common Errors

4. Sweep

Too fast near end point.

- Sweep motion near the end was too fast.
- Gradually slow the device towards the end and bring the system to a gentle rest at the end of acquisition.

STS104, Slide 33

Property of EZ Metrology © 2021. All rights reserved.

33

F. Common Errors

5. Wiggle

Wiggle force too low.

- Maximum force imparted to the device during acquisition did not meet minimum threshold.
- Increasing frequency over acquisition time will increase force imparted to the system.

STS104, Slide 34

Property of EZ Metrology © 2021. All rights reserved.

34

F. Common Errors

5. Wiggle

<A-11. Wiggle> shows lack of symmetry during Wiggle

- Door unit may be unstable; check suction cups, leveling feet, Red knob and telescoping tube locks.
- Test location for wiggle may be improper, door should be free to move unaffected by detents/seals.
- Too much amplitude/force.
- Force input vector isn't parallel to motion; be sure to have the door unit parallel to the axis of rotation of the door. Be sure to impart force through the handle along this axis.



STS104, Slide 35

Property of EZ Metrology © 2021. All rights reserved.

35

G. Results



STS104, Slide 36

Property of EZ Metrology © 2021. All rights reserved.

36

G. Results

1. Table

Results

Results of a session are given in the E – Results tab.

Eval

Results are graded with a similar color code to runs.

- - OK
- - Metric is slightly out of tolerance (5% < metric < 10%)
- - Metric is out of tolerance (> 10%)
- - Not measured

A - Identification B - Configuration C - Geometry D - Runs E - Results				
Type	Name	Eval	Actual	Unit Legend
⊙ Type: 01 General				
	Closing Type	■	Latch D...	Determined by <A-02, Overslam>
⊙ Type: 02 Closing Dynamics				
	Minimum Closing Speed	■	0.50	m/sec Minimum speed at 90 mm
	Minimum Pulse - Full Open	■	20.08	J Closing from 82 degrees
	Minimum Pulse - Outer Detent	■	-	J Not Measured
	Minimum Pulse - Inner Detent	■	-	J Not Measured
⊙ Type: 03 Latch & Seal System				
	Striker Alignment	■	1.22	mm Striker too low (Uncertainty of 0.22...
	Latching Force	■	86.5	N To reach Y = -6.68 mm overslam (Un...
⊙ Type: 05 Check System				
	Angle of Open Door	■	82.5	deg
	Angle of Outer Detent	■	-	deg Not Measured
	Angle of Inner Detent	■	-	deg Not Measured
	Maximum Pulling Force to First D...	■	-	N Not Measured



Property of EZ Metrology © 2021. All rights reserved.

37

G. Results

2. Sorting / Grouping

Sorting

Drag a column title into the sorting field to sort results by that parameter.

A - Identification B - Configuration C - Geometry D - Runs E - Results				
Type	Name	Eval	Actual	Unit Legend
⊙ Type: 01 General				
	Closing Type	■	Latch D...	Determined by <A-02, Overslam>
⊙ Type: 02 Closing Dynamics				
	Minimum Closing Speed	■	0.50	m/sec Minimum speed at 90 mm
	Minimum Pulse - Full Open	■	20.08	J Closing from 82 degrees
	Minimum Pulse - Outer Detent	■	-	J Not Measured
	Minimum Pulse - Inner Detent	■	-	J Not Measured
⊙ Type: 03 Latch & Seal System				
	Striker Alignment	■	1.22	mm Striker too low (Uncertainty of 0.22...
	Latching Force	■	86.5	N To reach Y = -6.68 mm overslam (Un...
⊙ Type: 05 Check System				
	Angle of Open Door	■	82.5	deg
	Angle of Outer Detent	■	-	deg Not Measured
	Angle of Inner Detent	■	-	deg Not Measured
	Maximum Pulling Force to First D...	■	-	N Not Measured

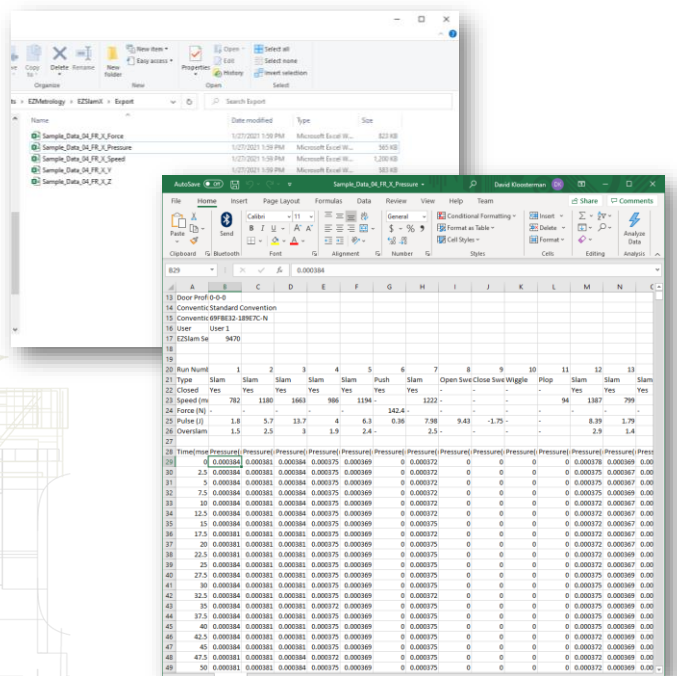
Property of EZ Metrology © 2021. All rights reserved.

38

Raw Data

Each individual sensor is exported to its own Excel file.

Raw data can be used to collect data in customized tests or recover data from rejected runs.



H. Reporting

2. Metrics Export

XLSX

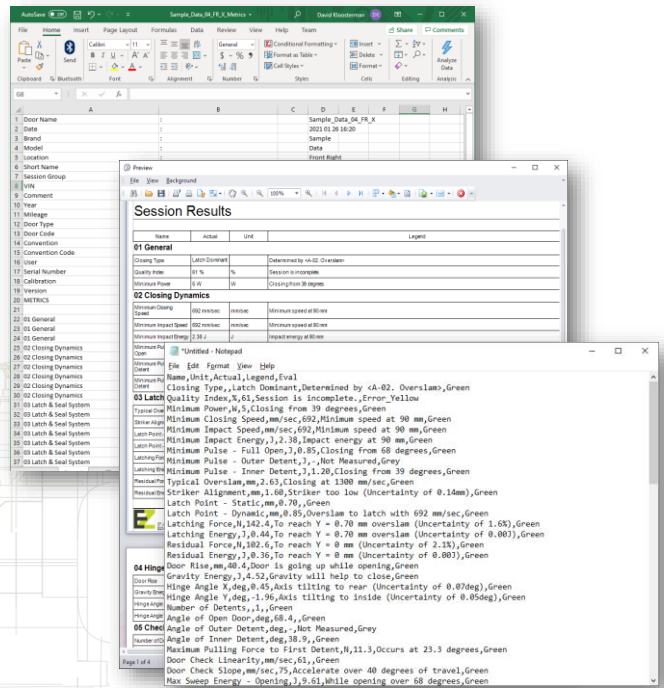
Metrics from the results tabs can be exported in Excel format. Click on the Metrics Export icon and select Save as XLSX.

PRINT

Print the metrics by clicking on the Metrics Export tab and select Print Preview. From the print preview screen, the metrics can be saved in multiple formats or printed.

COPY

Copy the metrics to the clipboard for pasting into another desired format by selecting Copy to Clipboard.



Property of EZ Metrology © 2021. All rights reserved.

41

H. Reporting

3. Graphics Export

XLSX

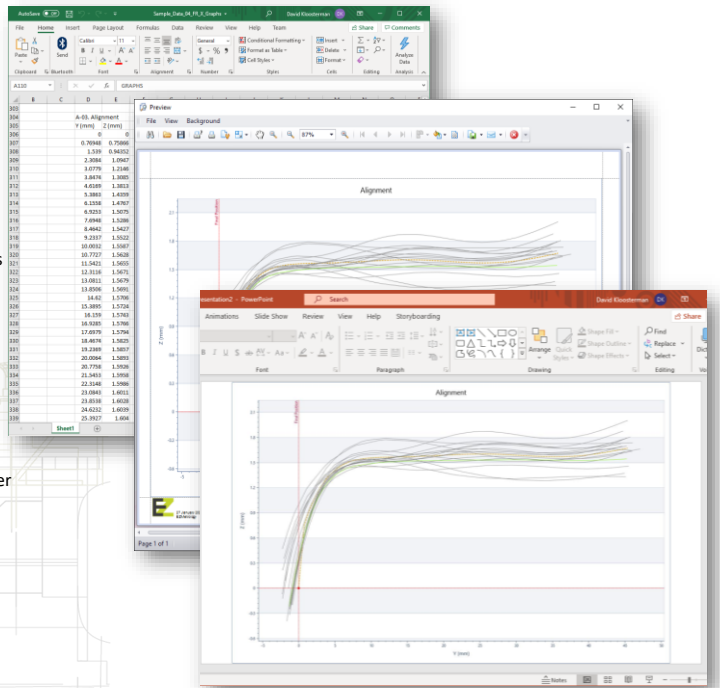
Graphs can be exported in Excel format. Click on the Graphics Export icon and select Save as XLSX.

PRINT

Print the active graph by clicking on the Graphics Export and select Print Preview.

COPY

Copy the active graph to the clipboard for pasting into another desired format by selecting Copy to Clipboard.



Property of EZ Metrology © 2021. All rights reserved.

42

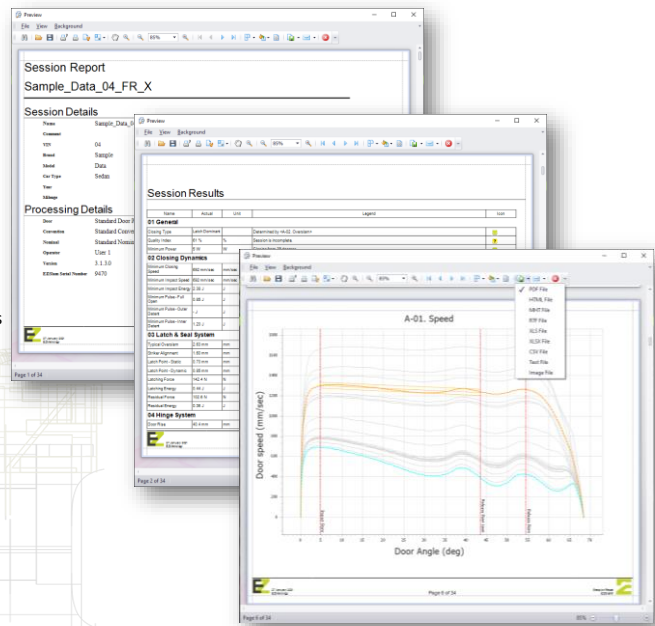
H. Reporting

4. Quick Report

Generates a report with all metrics and graphs.

Format & Print

Clicking on Quick Report will generate a print preview for the report. This report can be printed or saved in multiple formats (e.g., pdf, html, png).



Property of EZ Metrology © 2021. All rights reserved.

43

I. Review



Property of EZ Metrology © 2021. All rights reserved.

44

I. Review

1. Chapter 4

Topics addressed during this chapter:

Session Setup

Create a new session and configure the session and control the acquisition.

Session validation

Understand the feedback on the metrics, runs and corrective actions.

Session Reporting

Use the different methods of reporting the data for review or export.

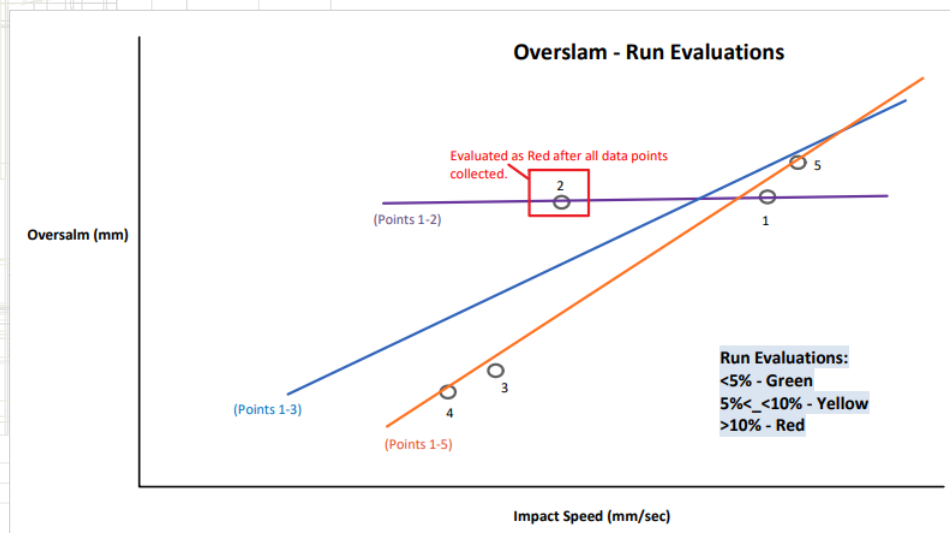


STS104, Slide 45

Property of EZ Metrology © 2021. All rights reserved.

45

SketchBook



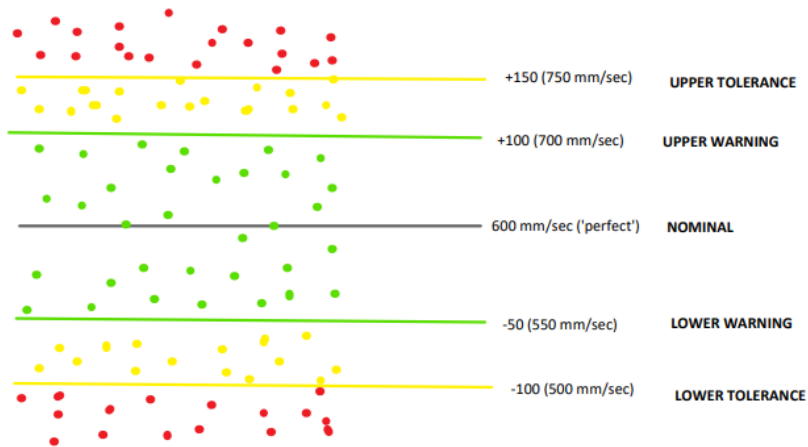
STS104, Slide 46

Property of EZ Metrology © 2021. All rights reserved.

46

SketchBook

Tolerances and Warnings



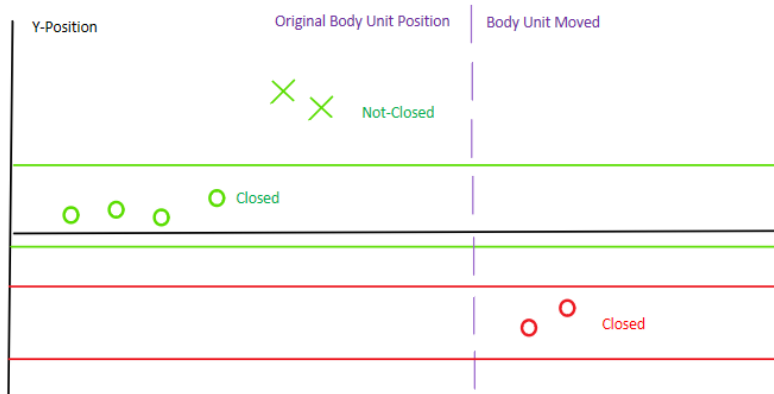
STS104, Slide 47

Property of EZ Metrology © 2021. All rights reserved.

47

SketchBook

Closed/Not-Closed | Body Unit Moved



STS104, Slide 48

Property of EZ Metrology © 2021. All rights reserved.

48