

# Michelin Tire Monitoring Wear & Damage User Guide



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# Disclaimer

- MICHELIN Tire Monitoring Wear & Damage is dedicated to “real environment test program”. Normal procedure of tire check must continue in parallel of the “real environment test program”.
- Each Party shall refrain from communicating or promoting publicly of the in real environment test program’s existence and conditions of deployment unless such communication is formally agreed in advance with Michelin.
- A specific Non-Disclosure Agreement has been signed with the different participants of the “real environment test program”.

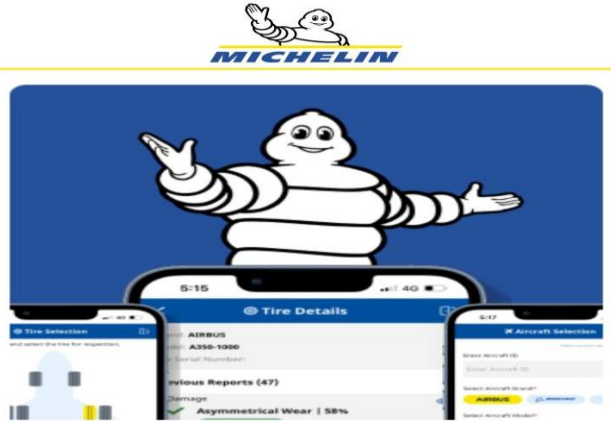
# Install The Tire Monitoring W & D App



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# Android App Installation of Tire Monitoring W&D

- Please download “Tire Monitoring W&D Android app” from the following website which needs to be opened on your Android Smartphones browser
- <https://tiremonitoringwdapp.michelin.com.cn/>
- The content on this website is also made available in Chinese for your convenience.
- Beside is the mobile website screenshot for your reference.



**WELCOME TO MICHELIN,**  
Please download Michelin's Tire Monitoring Wear & Damage Mobile App for your Android Smartphones by clicking on the below link

**Tire Monitoring Wear and Damage App**

Please download the below User Guide to understand how to use the Tire Monitoring Wear and Damage App

**Tire Monitoring Wear and Damage App User Guide.pdf link**

**Thank You.**

欢迎来到米其林，  
请点击以下链接下载适用于您的Android智能手机的米其林轮胎监测磨损和损坏移动应用程序

**轮胎监测磨损和损坏应用程序**

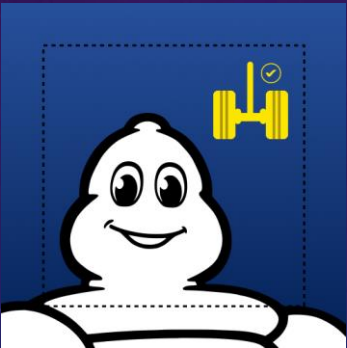
请下载以下用户指南，了解如何使用轮胎监测磨损和损坏应用程序

**轮胎监测磨损和损坏应用程序用户指南.pdf 链接**

谢谢。

# iOS App Installation of Tire Monitoring W&D



- iOS App is published on Apple App Store.
- Search the app on Apple App Store by its official name – “Tire Monitoring Wear & Damage”
- Once you locate the app, install it on your iPhone.
- Below is the app icon you could see on Apple App Store.

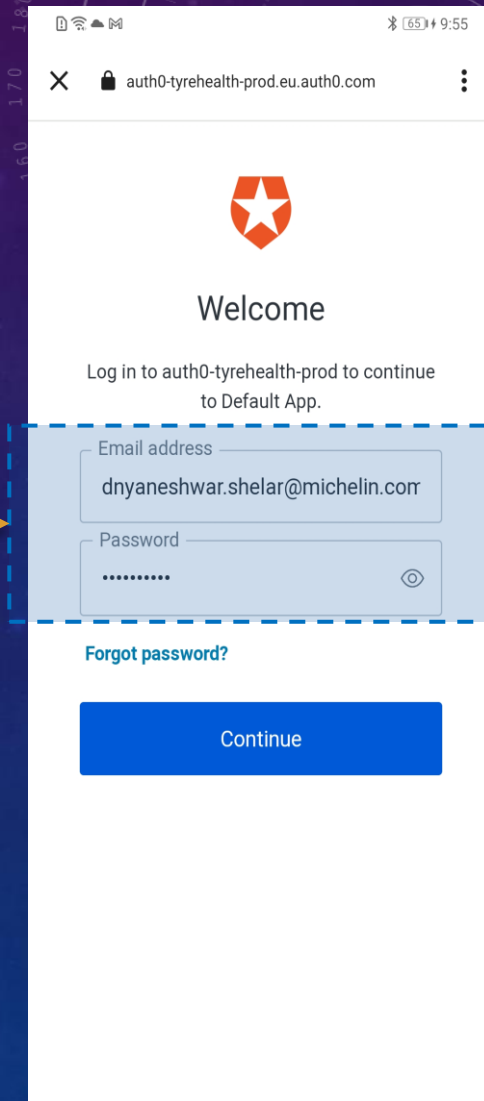
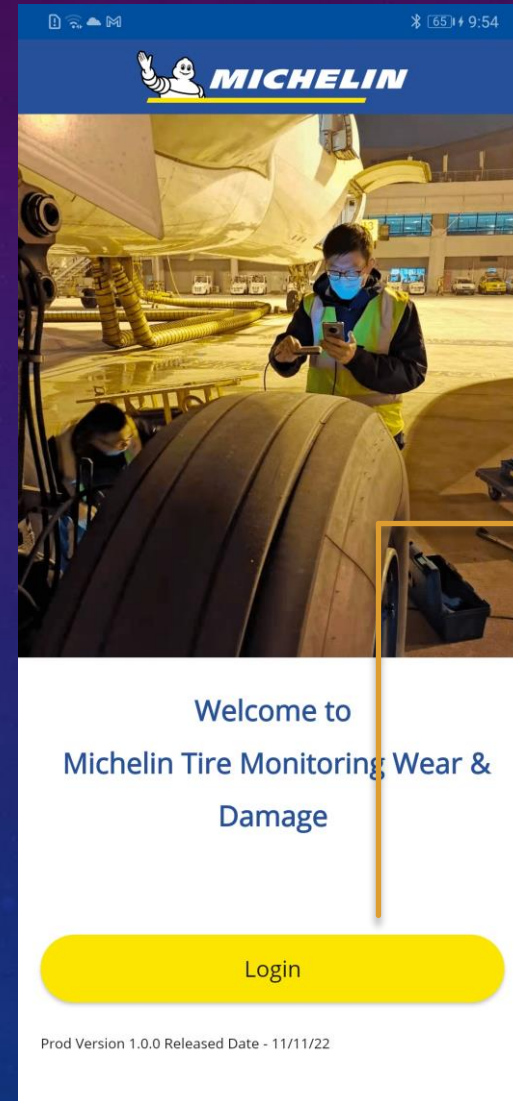


# Login process on Tire Monitoring W & D App



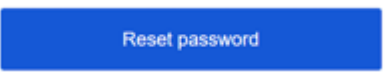
# App Login Process

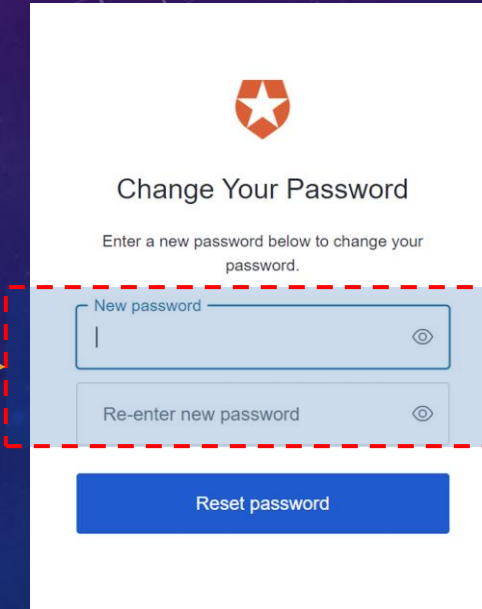
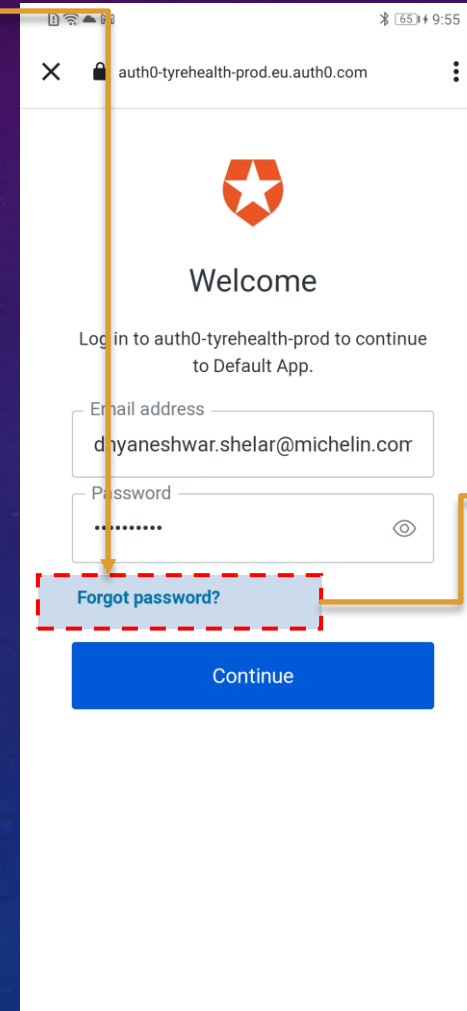
1. Open the App on your Smartphone (Android/iOS)
2. Click on  button.
3. Enter Email & Password.
  - Use the Email and Password shared with you separately by Tony Wang who is Michelin's Customer Support Engineer.
4. Click on  button to login to the app.





# Reset Password

1. Click on Forgot Password? link.
2. It will open a new window to reset password.
3. Enter and re-enter new password and click on  button.
4. Use new password to login to app as shown in previous slide.



# Aircraft & Tire Identification.



# Aircraft & Tire identification

## ▪ Aircraft selection screen

1. Enter Aircraft ID (Optional).
2. Select Aircraft Brand (Mandatory), this will allow Aircraft Model to display model list.
3. Select Aircraft model and click on next button.

## ▪ Tire selection screen

1. Select the desired Tire & position to be inspected under aircraft.
2. Click on Next button.

**Note - If you are inspecting a Tire in a Shop (not on an Aircraft), Please select any random Aircraft Brand or Other option & Model and Tire position.**

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Fields marked with \* are mandatory

Enter Aircraft ID  
A40-OMN

Select Aircraft Brand\*  
AIRBUS BOEING Other

Select Aircraft Model\*  
A320

Next

Prod Version 1.0.0 Released Date - 11/11/22

Click and select the tire for inspection.

Next

# Aircraft & Tire identification

## ■ Tire Selection screen

1. Enter accurate 10-digit Tire Serial Number embossed on the Tire. (Optional).
2. Click on Next button.

## ■ Tire Details screen

1. Verify Brand, Model, Serial no.
2. Perform Tire inspection using either “Damage Classification” and “Wear Measure” option.
  - Damage Classification is used to identify the Physical Damage to the Tire.
  - Wear Measure is used to measure the Tread Depth.

**Note – Wear Measure Option is not available on iOS app.**

Brand: AIRBUS  
Model: A320

Enter Tire Serial Number

1012P10909

Next

Brand: AIRBUS  
Model: A320  
Tire Serial Number: 1012P10909

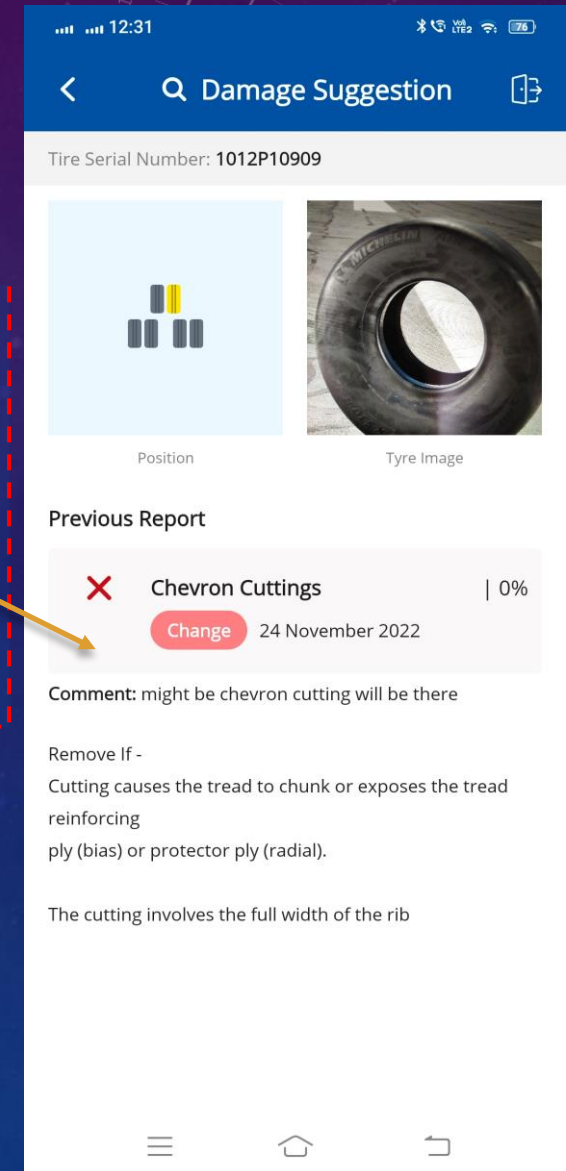
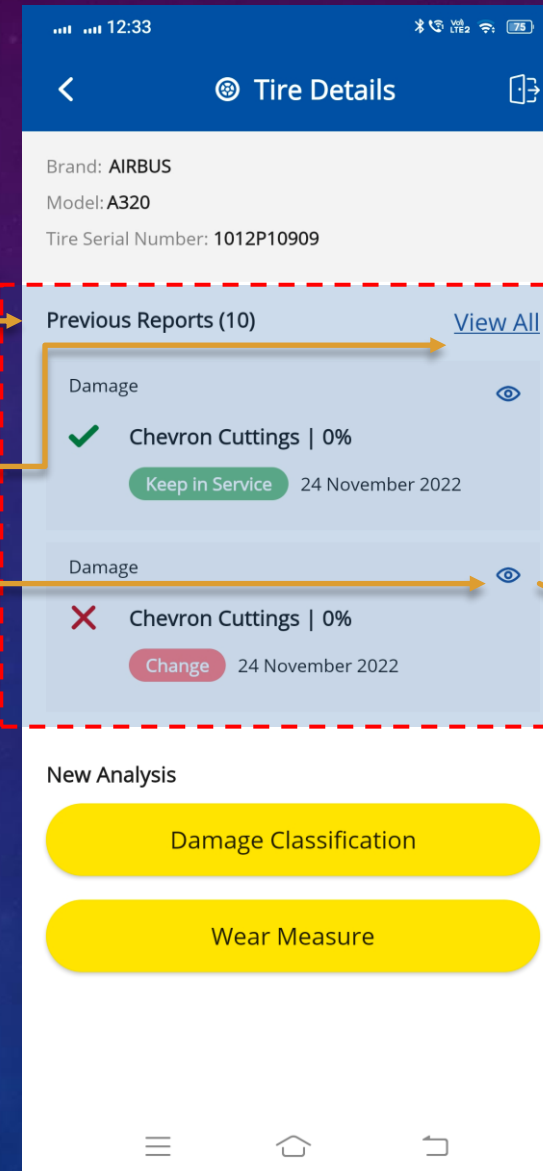
New Analysis

Damage Classification

Wear Measure

# Previous Report

- All the inspection reports for same serial no. can be seen on tire details screen “Previous Reports” section.
- “View All” option can be used to expand all the reports.
- Info icon(i) can be used to see more detail about that report.



# Damage Classification



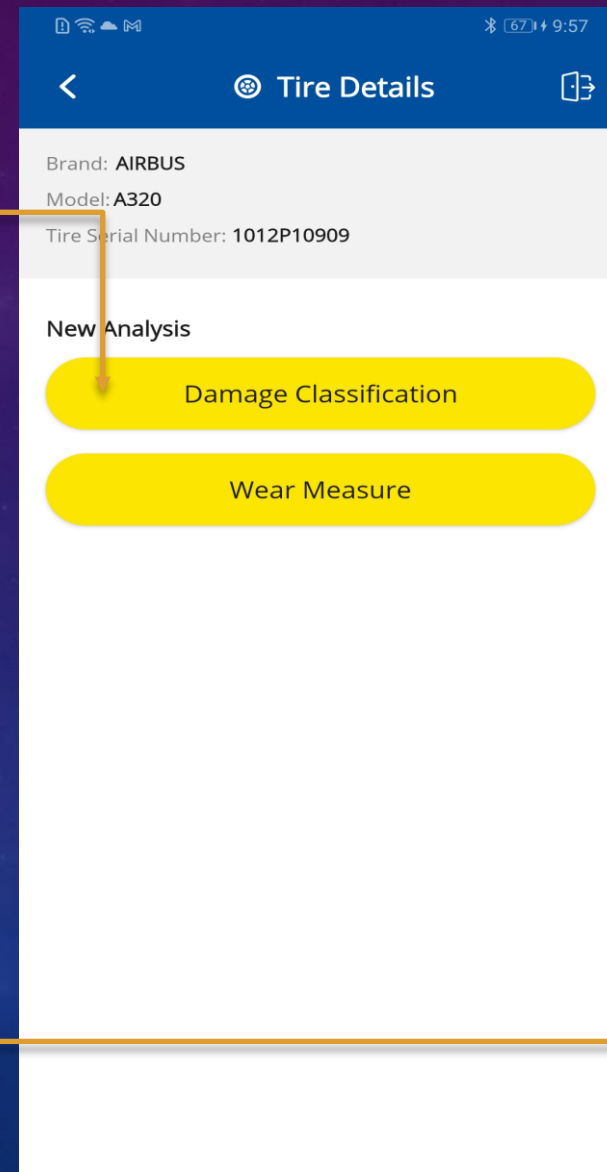
# Damage Classification

- Damage Classification is being used to identify the physical damage to the Tire.
- It uses mobile device camera to take the Tire Photo.
- **Best Practices for taking Damaged Tire Photos**
  1. Orientation : in front of the tire tread or in front of the sidewall of the tire (avoid photo in angle for example on tire shoulder)
  2. Zoom : respect the **red** guidelines given by the app to take the picture with the red lines that help to guide the zoom
  3. Tire image should be inside the 2 lines
    - 2 straight lines for tread
    - 2 curved lines for sidewall & bead



# Damage Classification

1. Click on the **Damage Classification** button to perform the inspection.
2. It will activate the mobile device camera.
3. Select the “Tread” OR “Sidewall & Bead” option at the top of screen to take the Damaged Tire Photo.
4. Select Torch option to turn on mobile torch.
5. Ensure the Tire is properly covered in the 2 **red** guidelines.
6. Take the Photo by clicking on the shutter button.





# Damage Classification

1. Capture tire damage picture.
2. Locate the damage area you want to highlight using bounding box.
3. Click on send to server button.

## Best practices for the bounding box

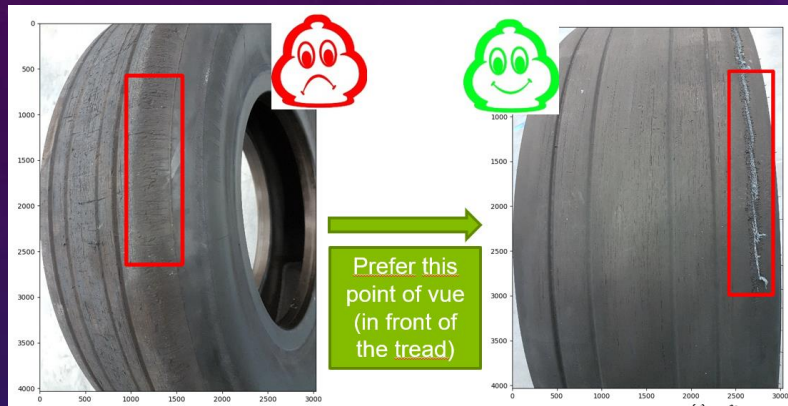
1. Avoid trace of chalk, finger or sticker in the bounding box of the damage.
2. Ensure the Tire sidewall must be inside the red curves.



Bounding Box

# Damage Classification Sample Images

## Orientation



## Zoom

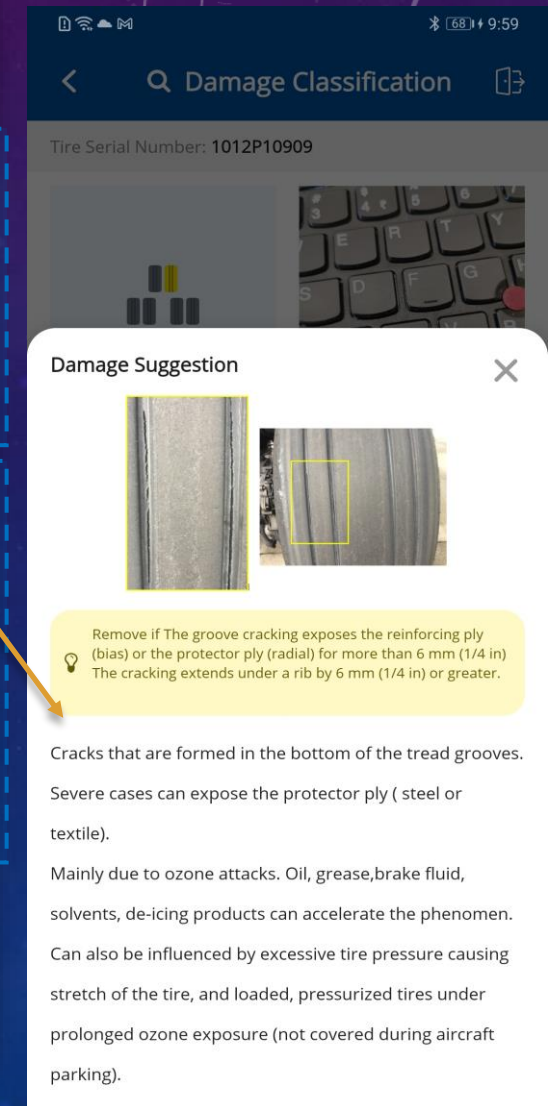
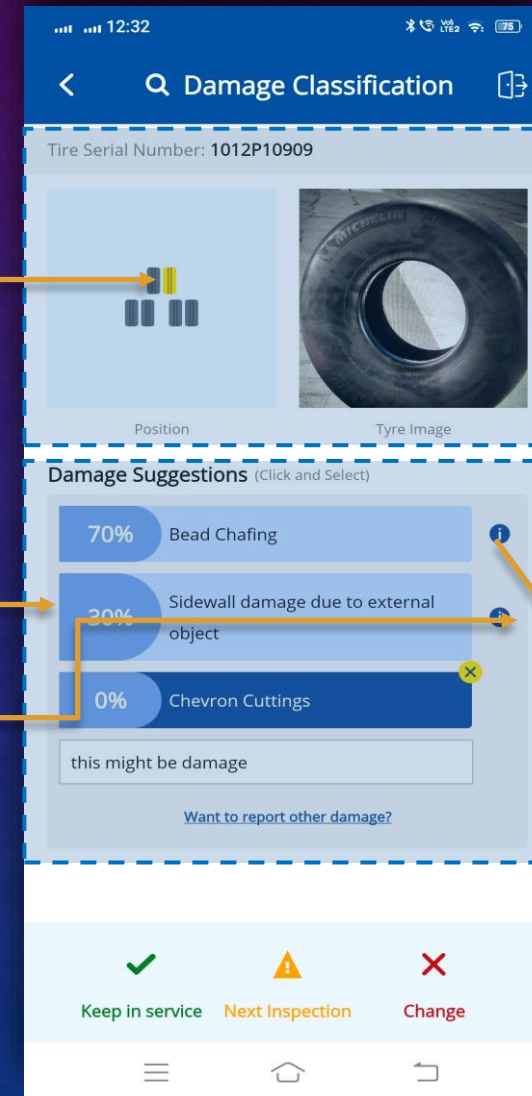


## Bounding box



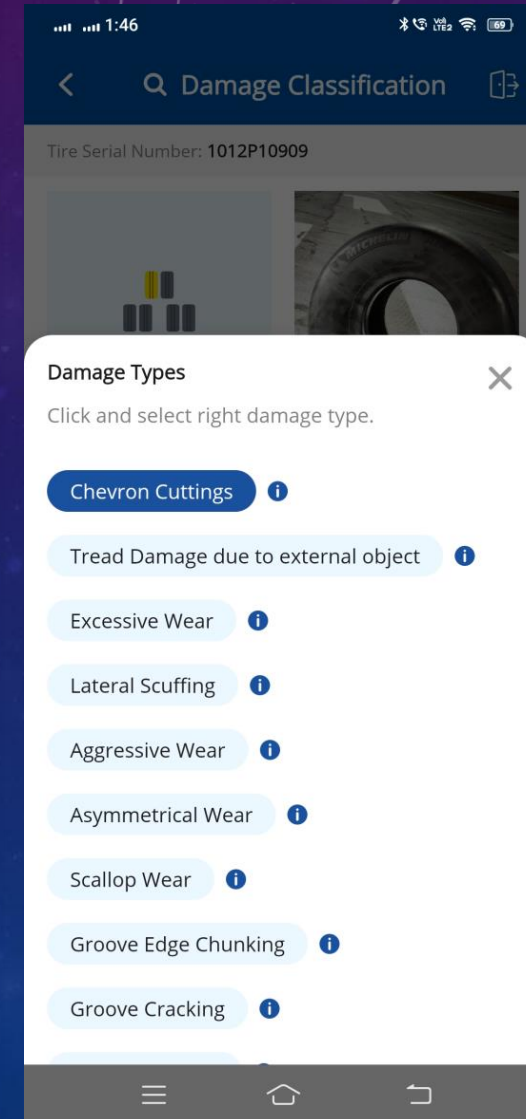
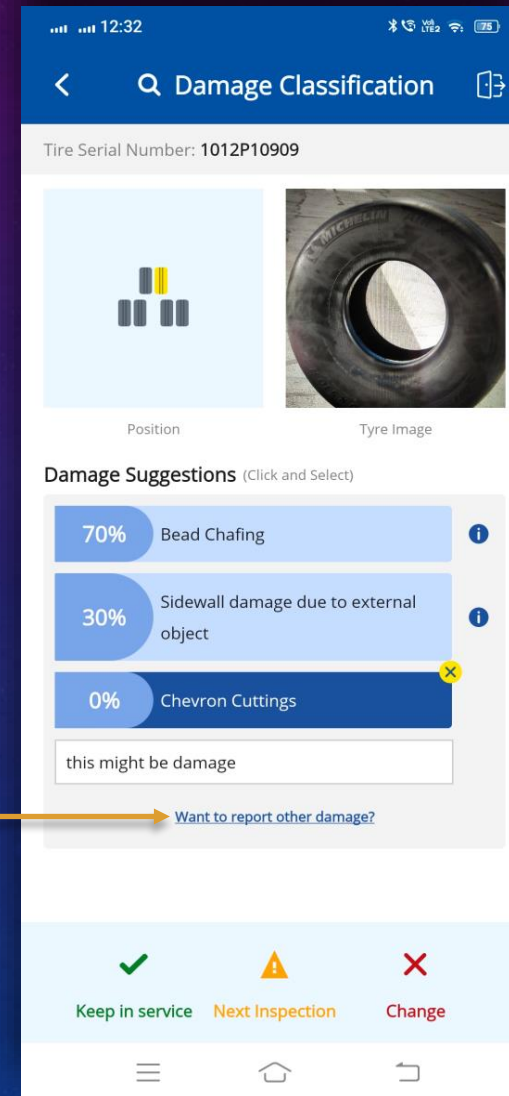
# Damage Classification

1. Verify tire position, damage picture and different damage suggestion.
2. Display damage suggestion for probability  $> 5\%$  only.
3. Select the desired damage from suggestion.
4. Click on info icon(i) to view more information about damage : pictures, description and preconsisation (from the Michelin Aircraft Tire Care & Service Manual).



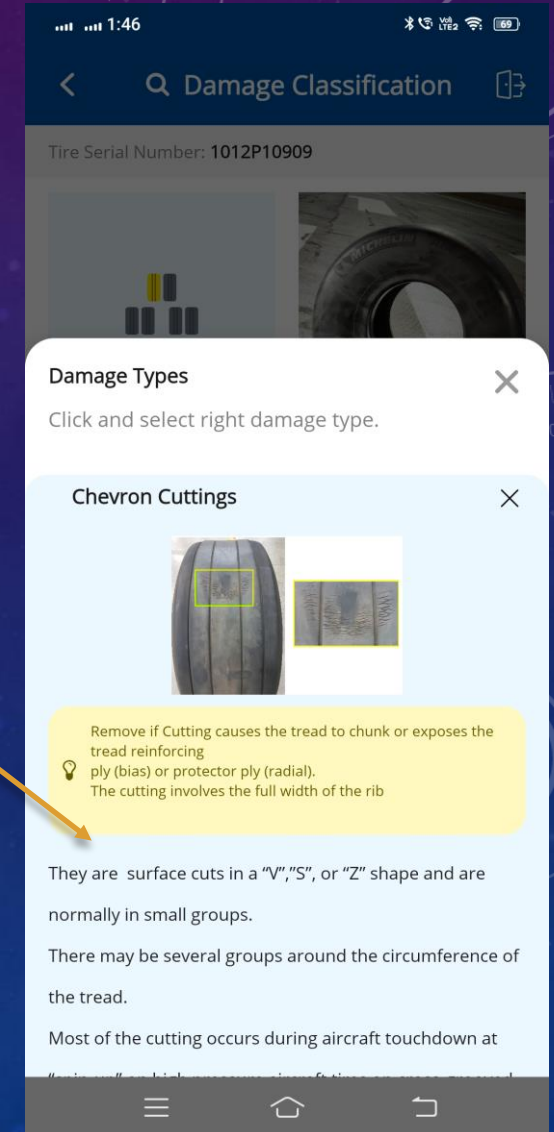
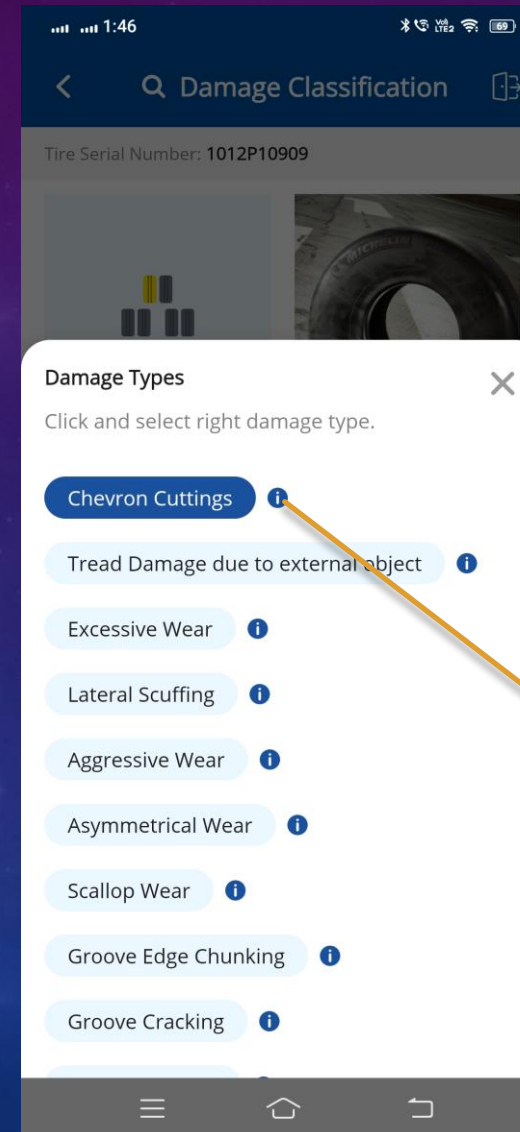
# Damage Classification

1. Click on “Want to report other damages” to view entire list of damages.
2. There are total 16 Damage Categories available on the app, however only top 5 damages are shown to the user.
3. User can select any additional damage if required from 16 list of damages.
4. Click [here](#) to view all 16 categories of damage type for current version of V3.



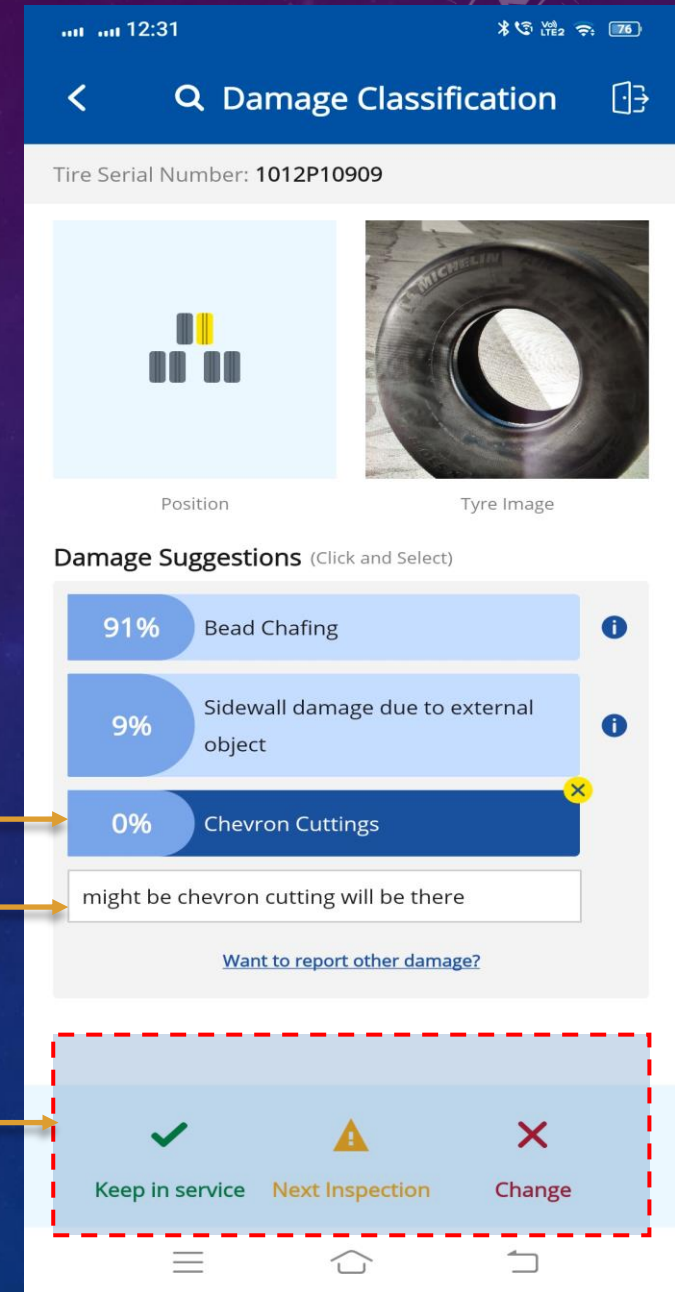
# Damage Classification

1. Click on info icon(i) to view more details about damage.
2. Select the desired damage from the list and click and close the window (X icon).



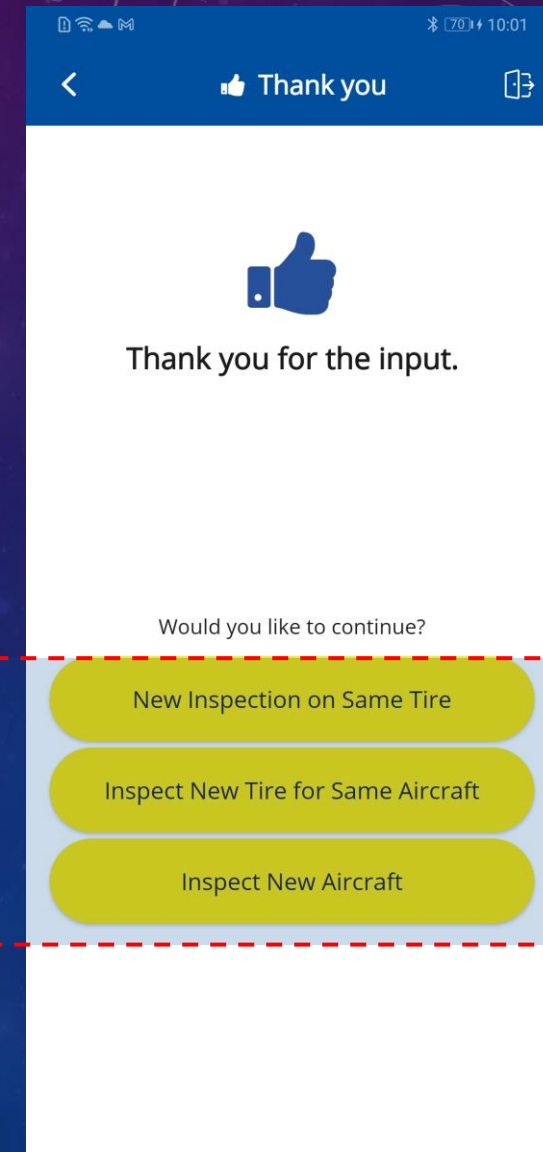
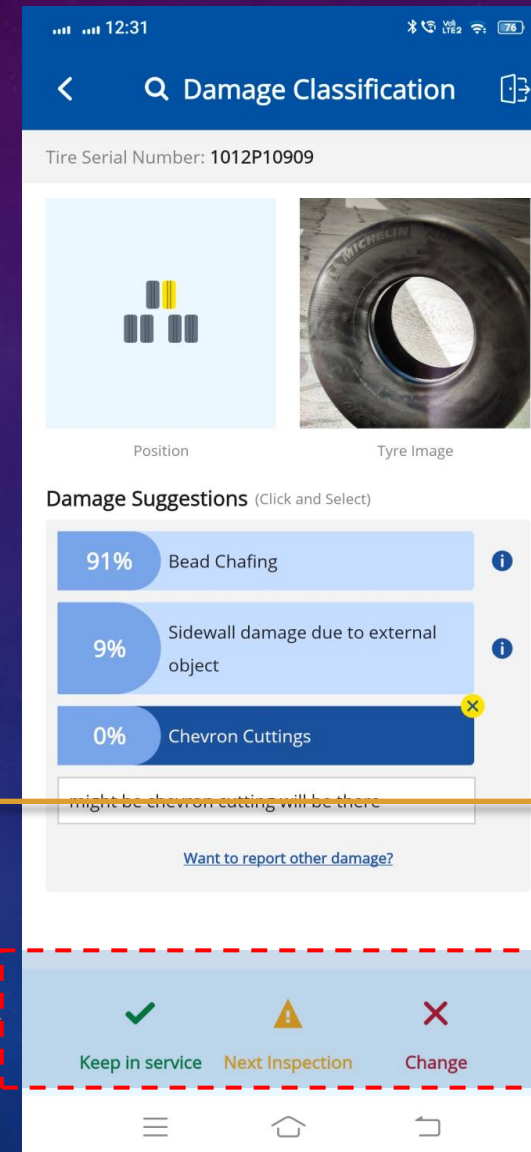
# Damage Classification

1. Verify newly added damage is showing at the end of damage suggestion list.
2. You can Enter comment for newly added damage.
3. Click on “Keep in service OR Next inspection OR Change” to decide further action.



# Damage Classification

1. User can perform any action on tire to “Keep in Service” or “Next Inspection” or “Change”.
2. Once inspection is completed, it will ask user to continue for another inspection.
3. User can perform New Inspection on Same Tire or New Tire (Same Aircraft) or Inspect New Aircraft.



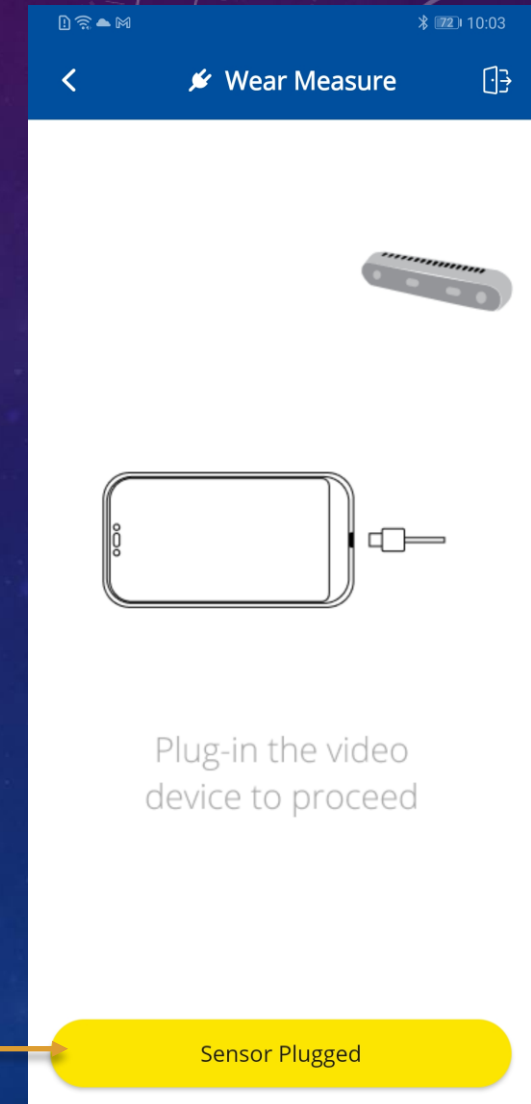
# Wear Measure (Android App Only)





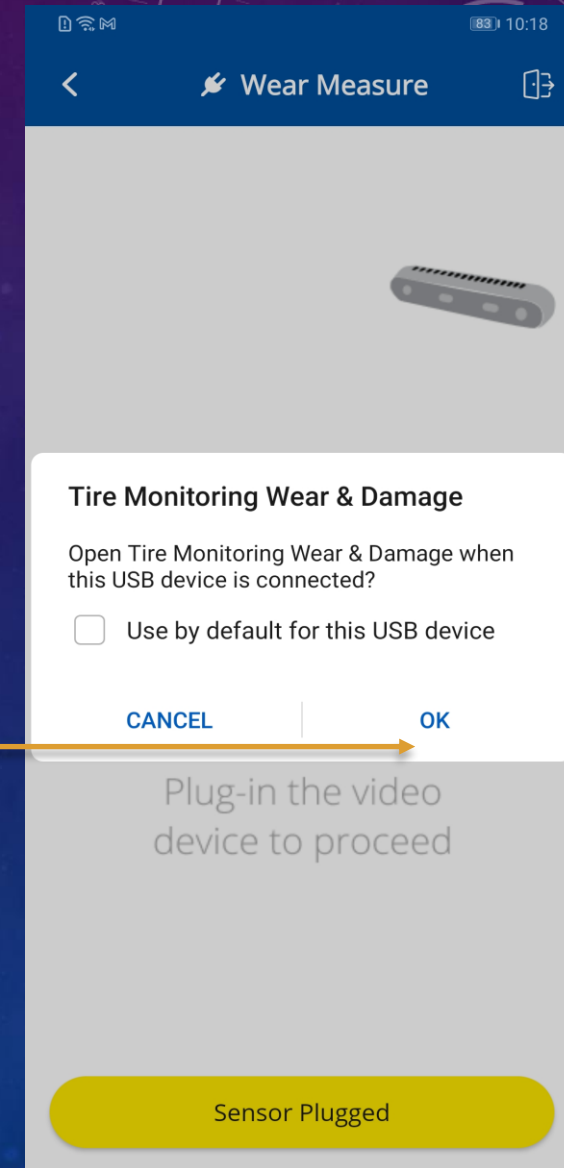
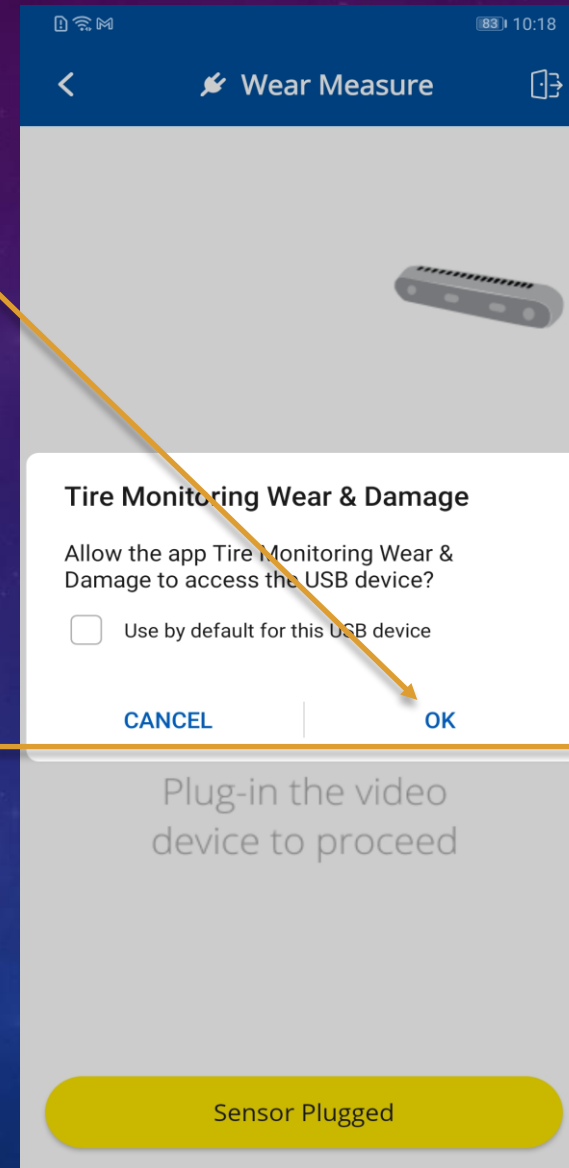
# Wear Measure (Android Only Feature)

1. To perform inspection by clicking picture using external camera (RealSense D415).
2. Click on Wear Measure button to perform inspection.
3. Plug the 3D camera external device (connect the cable from the camera to the smartphone).



# Wear Measure (Android Only Feature)

1. Provide app access to USB device by clicking OK button.
2. Connect external camera device by clicking on OK button.



# Wear Measure (Android Only Feature)

- This screen will display only when connecting camera for 2nd time.
- Please wait for 10 sec if camera is not ready.

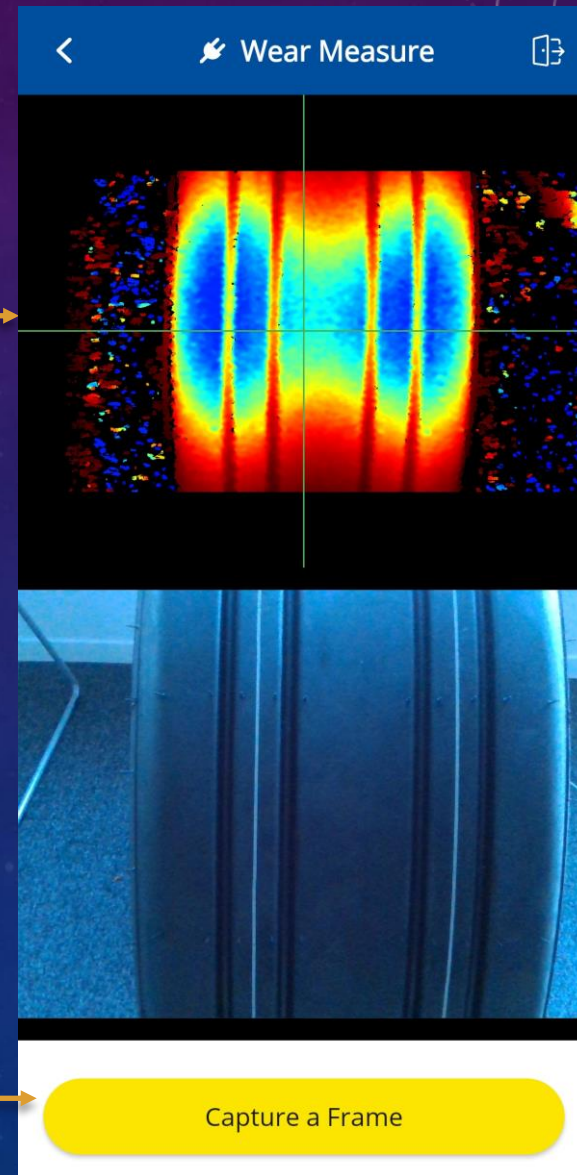


# Wear Measure (Android Only Feature)

1. Adjust the distance between the 3D camera and tire surface (between 10cm to 50cm) to make sure depth map becomes visible properly.
2. Click on capture a frame button.

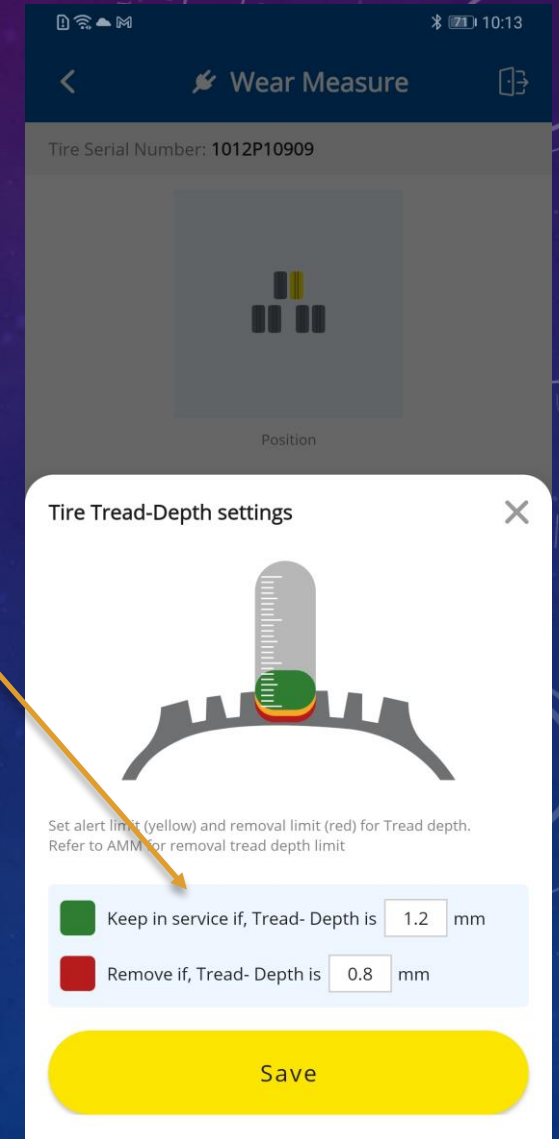
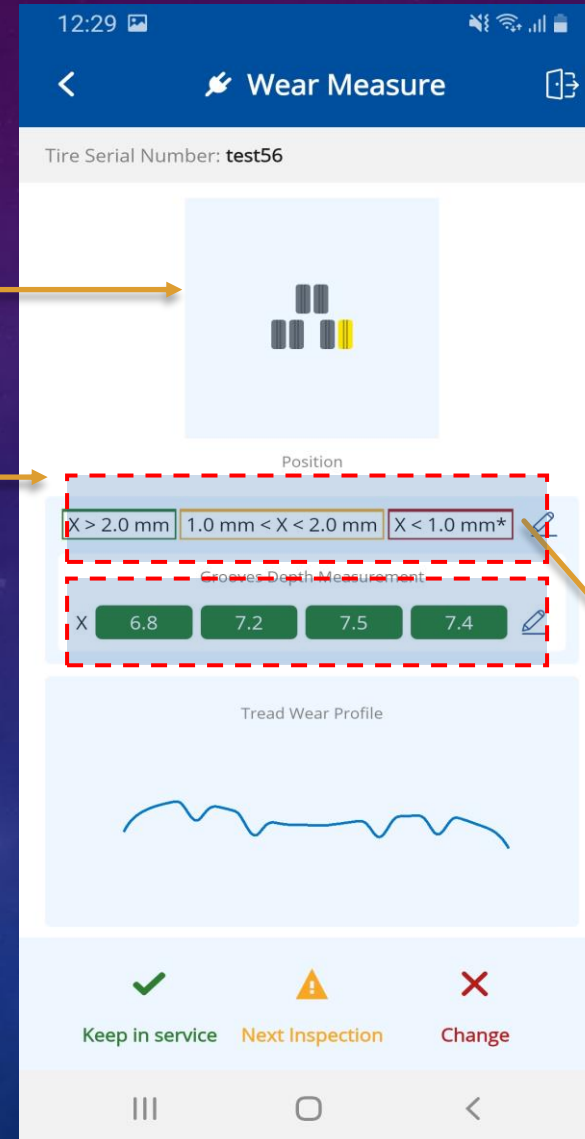
## Best practices for depth map acquisition

- Try to capture the entire tread width, in front of the tire to have a symmetrical color map

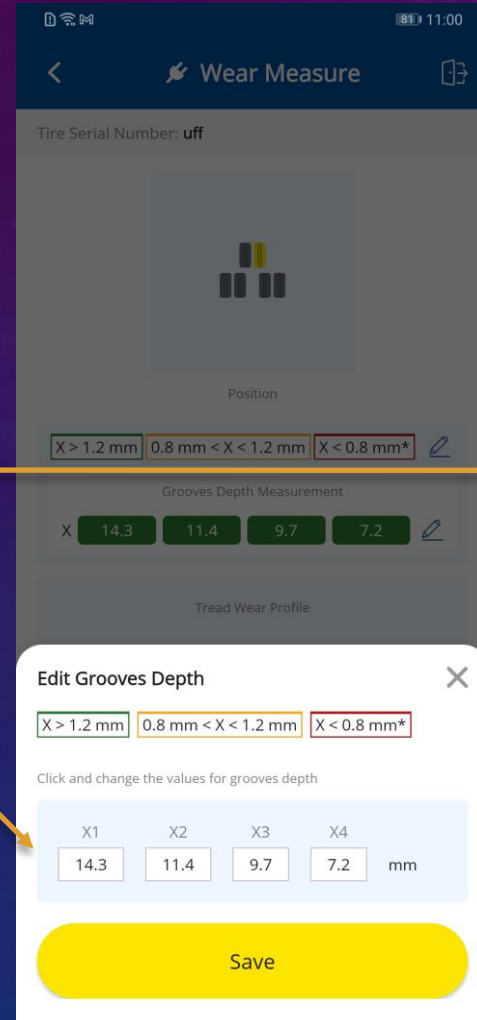
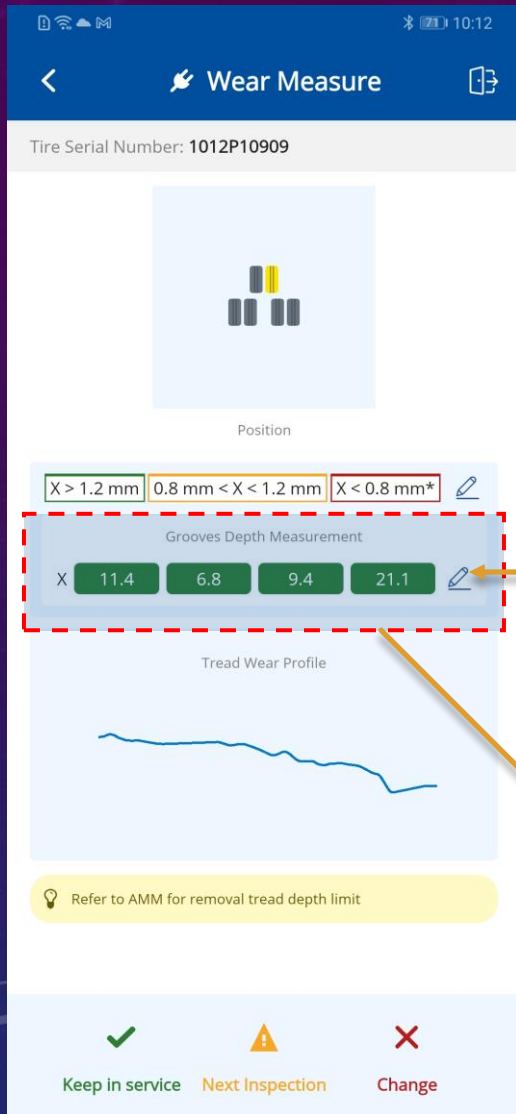


# Wear Measure (Android Only Feature)

1. Verify tire position, Groove depth, tread wear profile.
2. User can define specific range of tread depth by showing different colors (refer to AMM for removal tread depth limits).



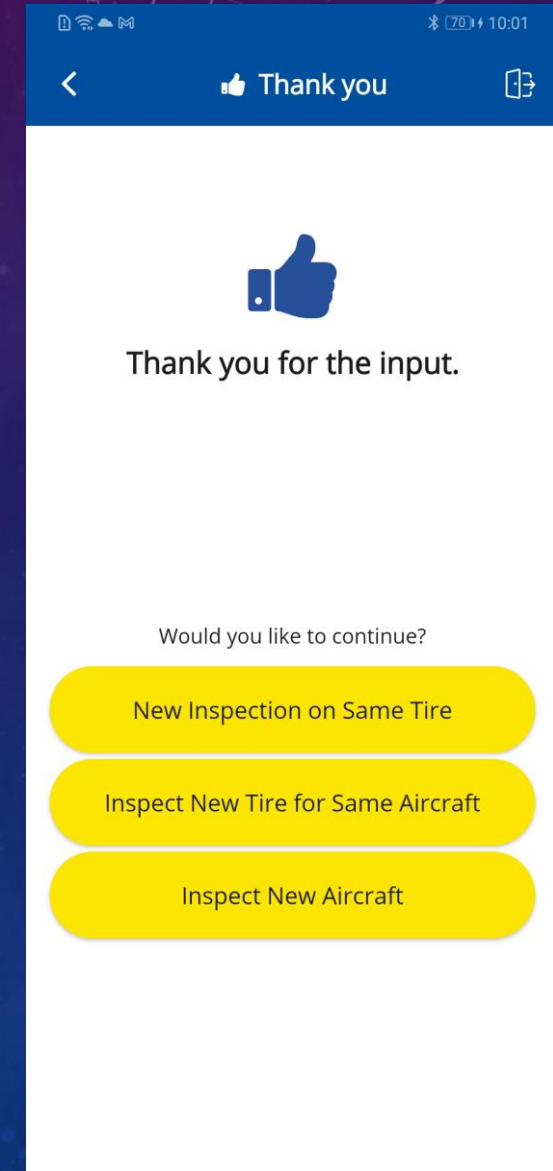
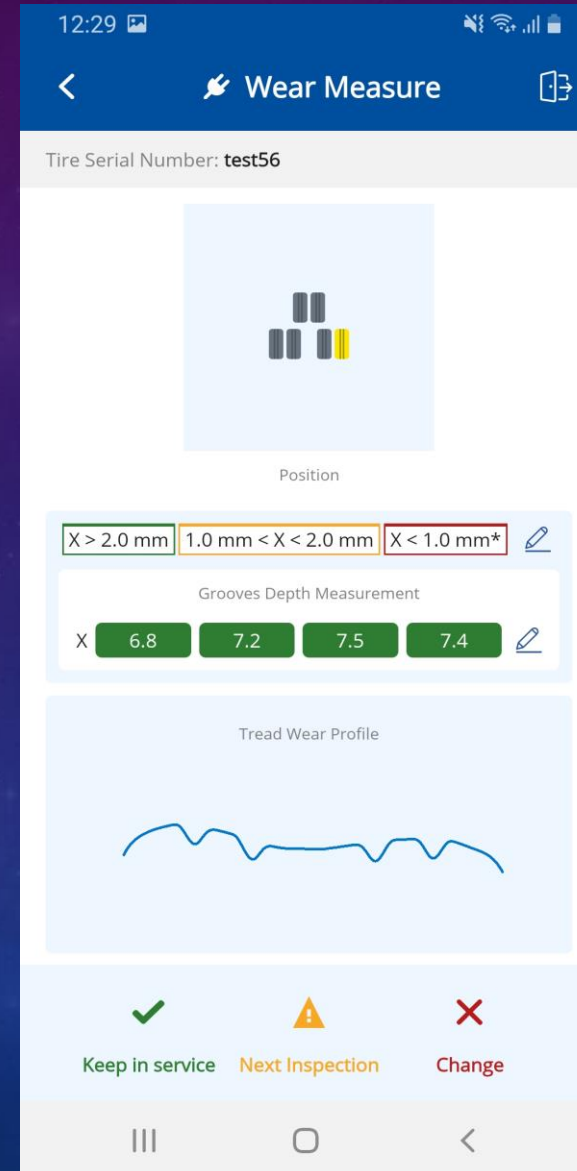
# Wear Measure (Android Only Feature)



1. User can correct the measured tread depth by their own measurement (manual gauge or other).
2. Values of Groove depth (X) can be changed using edit groove option.

# Wear Measure (Android Only Feature)

1. User can perform any action on tire to **“Keep in Service”** or **“Next Inspection”** or **“Change”**.
2. Once inspection is completed, it will ask user to continue for another inspection.
3. User can perform
  1. New Inspection on Same Tire or
  2. New Tire on Same Aircraft or
  3. New Aircraft.



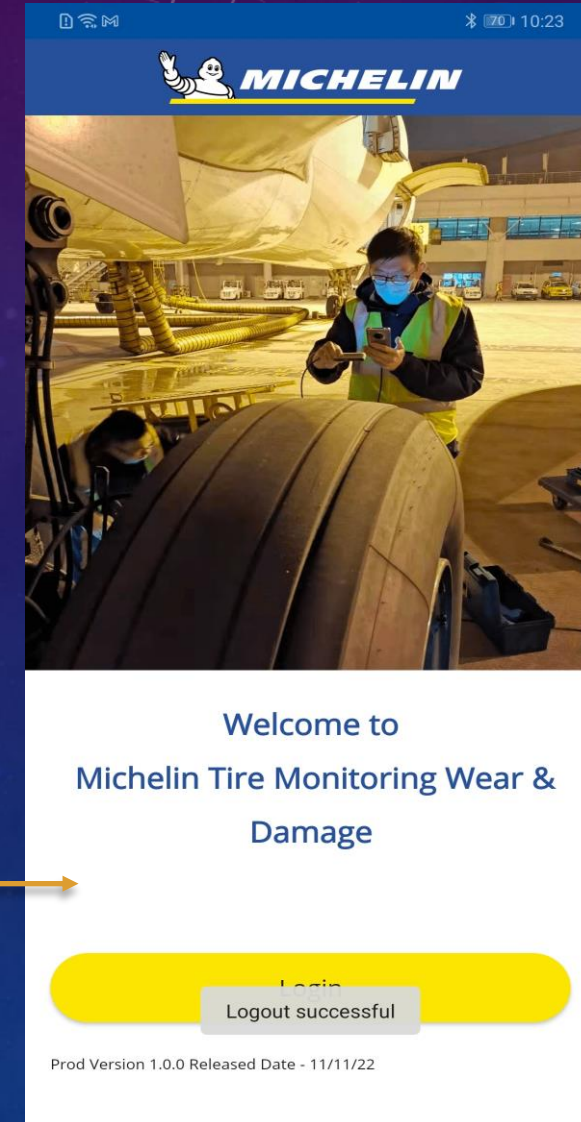
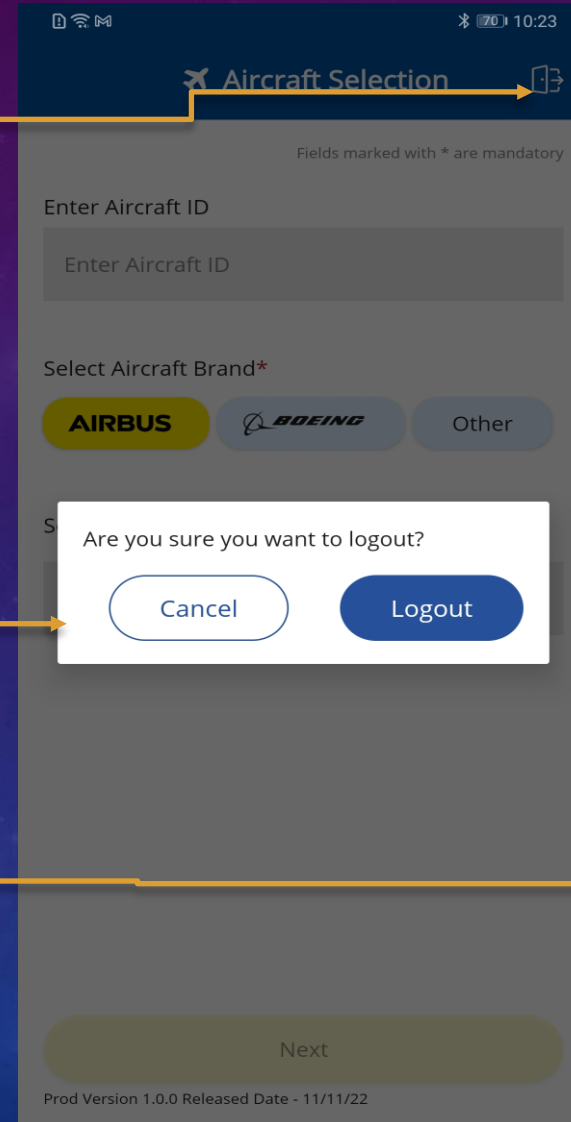
# Logout from the App





# Logout from the App

1. User can logout from the app by clicking on logout icon placed at top right corner of the app.
2. Pop up message will display to confirm logout from app. Then click on logout button.
3. After successful logout, user will be moved to home screen.



# Appendix



# Appendix

## 16 categories of damage type for current version of V3

1. Aggressive wear
2. Chevron Cuttings
3. Groove Edge Chunking
4. Groove Cracking
5. Tread Chunking
6. Scallop Wear
7. Contamination
8. Tread damage due to external objective
9. Excessive wear
10. Shoulder wear
11. Asymmetrical Wear
12. Flat Spots
13. Stripped/Peeled Rib
14. Bead Chafing
15. Sidewall damage due to external objective
16. Lateral Scuffing

# Thank You.

For any further queries please reach out to your Michelin Customer Support Engineer.

