



# Unlocking Virtual Tuning of the Brake Pedal Feel on a Driving Simulator



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# Aston Martin History

- Founded in 1913 by Robert Bamford and Lionel Martin.
- Released some iconic cars:



- Using VI-Grade since 2017.
- Push to virtual development.

1913 —  
Aston Martin  
Lagonda founded

2017  
VI-Grade

2019: DBX

2020  
Compact  
Simulator

2021: Valkyrie

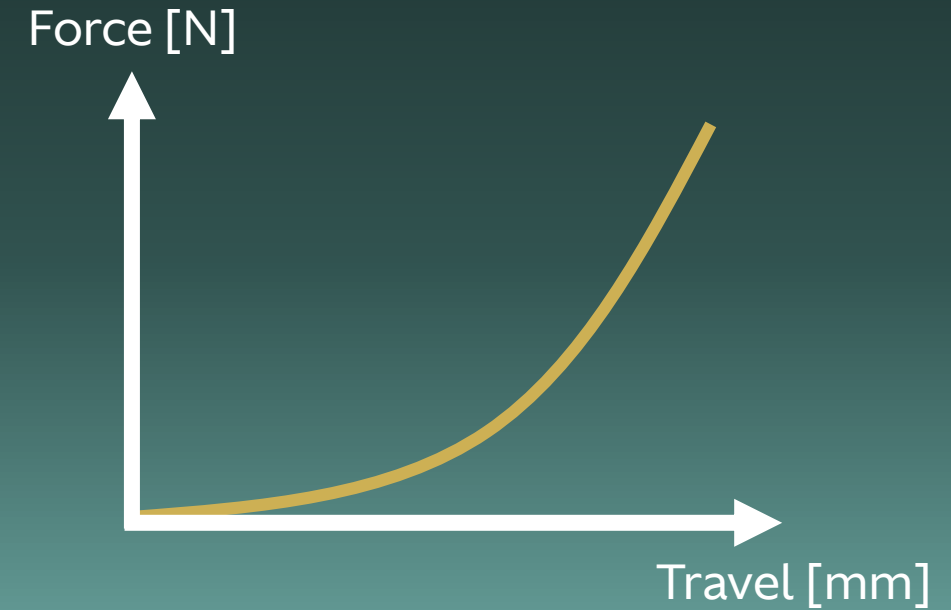
2023: DB12

2024: Vantage, Vanquish

2025: Valhalla

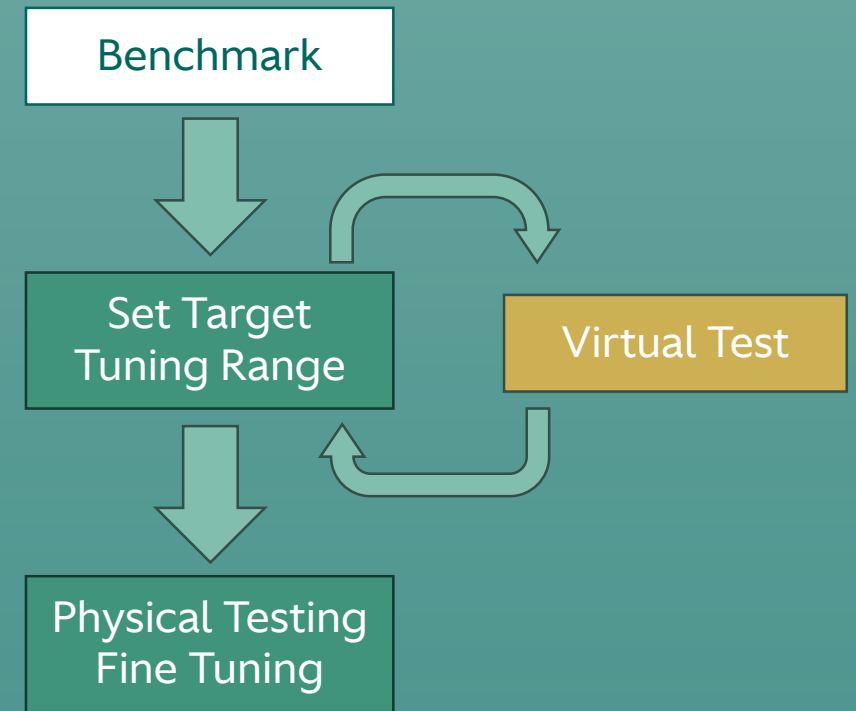
# Brake Pedal Feel Background

- Brake pedal feel is pedal force against travel.
- It is one of the few interfaces a driver has with the car, and therefore a key characteristic.
- With a recent simulator update we can use a custom profile, allowing virtual tuning.



# New Development Process

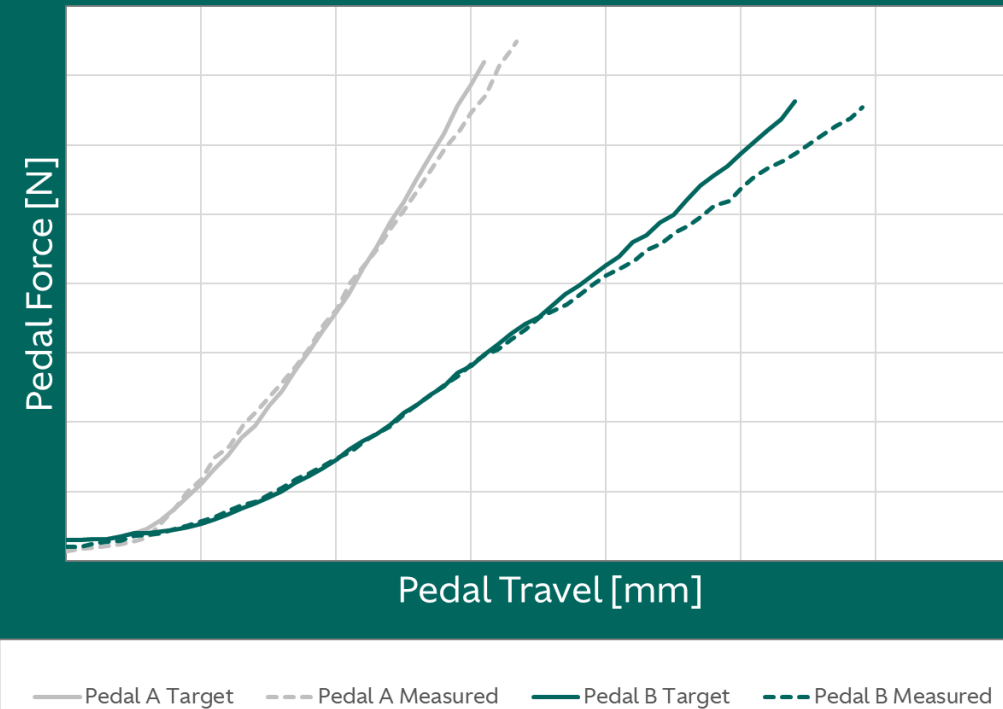
- Aim is to produce a great feeling pedal in line with the DNA of the car.
- Originally would estimate off benchmarks and testing prototypes.
- Modern cars are designed with much shorter cycle times, and less prototypes.
- Problem: need to freeze a tighter target tuning range.
- Solution: can implement a virtual test, and benchmark virtual proposals.
- Target tuning range can be focused with confidence.



# Simulator Correlation

- To enable this new process, we need to correlate the simulator.
- The simulator brake pedal was instrumented to measure the pedal force and travel.
- Some characteristics of the simulator brake pedal needed to be compensated for.
- Overall, the fit is strong, giving confidence in using the simulator for brake tuning work.

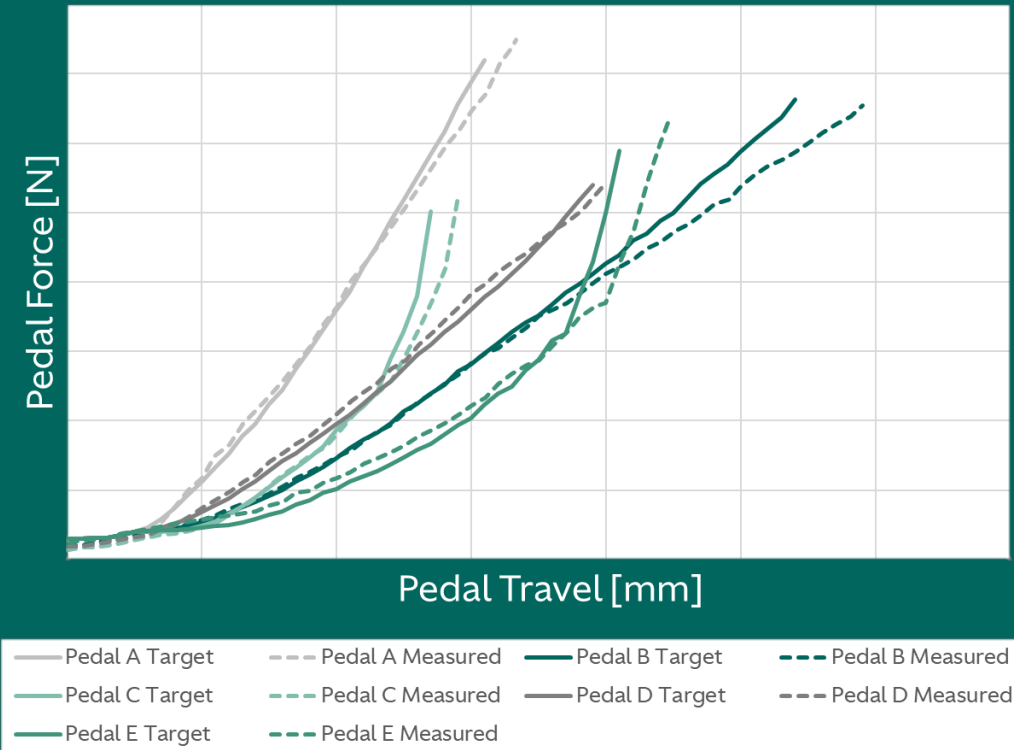
## Brake Pedal Feel



# Virtual Brake Tuning Session

- Different proposal brake profiles were created.
- A jury assessment was conducted, where multiple engineers performed a blind test.
- Outcome is a selected profile, giving a more precise zone to focus physical testing on.
- The new process has been proven to work effectively. Saving time needed on a prototype car.
- Immersion on the simulator is also improved.

## Brake Pedal Feel



# Conclusion

- The simulator brake pedal has been correlated.
- Virtual brake pedal feel tuning session successfully carried out. Allowing the Brakes team to focus on the tuning range of interest.
- New process proven to work. Saving time needed on a prototype car.
- Immersion on the simulator is also improved.



ASTON MARTIN



Thank you, any questions?



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