Saudi Toyota Hill Climb Championship

PERFORMANCE FACTOR (Pf) CONCEPT OF CAR CLASSIFICATION

EXPLANATION AND REQUIREMENTS FOR 2025 EVENTS

SAMF

SAUDI TOYOTA CHAMPIONSHIP Hill Climb

HILL CLIMB

OPEN
TECHNICAL
REGULATIONS

NEW
PERFORMANCE
FACTOR

LOOKING ***TO THE FUTURE***

FIA

INTRODUCTION PERFORMANCE FACTOR (Pf)

CALCULATION AND CLASSIFICATION

FIA Pf WEBSITE

COMPETITORS

SCRUTINEERS

- Appendix 1- Input data for the FIA **Pf** website
- Appendix 2 - Weight
- Appendix 3 – Engine
- Appendix 4- Chassis
- Appendix 5- Aerodynamic component dimension definition
- Appendix 6 - Chassis component classification

The Performance Factor (**Pf**) concept is designed to classify a diverse range of 'production based' cars for all hill climb competitions.

Using physical data input by the **competitor** describing their car, calculations are made to derive a **Pf** number that places the car in the appropriate class.

The **Pf** will ensure that:

- The *competitor* is clear which class the car is allowed to compete in.
- The *organiser* can easily put the car in the appropriate class for an event.
- The *scrutineers* have physical elements available at an event to check against the classification.
- The stewards can resolve technical protests at an event without reference to paperwork from other championships/homologations, etc.

SAMF will implement the Pf classification in 2025 for KSA events

PERFORMANCE FACTOR (Pf)

The **Pf** is derived from physical data input by the competitor to describe the car being entered..

Below are the two steps required to calculate the Pf **on the FIA website**

FIA Pf Website Features	
Input Car Data	Competitor enters data for his/her car.
Calculation	FIA **Pf** Website uses input data to calculate a Pf number.

PERFORMANCE FACTOR (Pf)

a) Calculation

The **Pf** calculation is as follows and is detailed in *Appendix 1:*

$$\textbf{Pf} = \frac{\textbf{Race Weight}}{(\textbf{Engine}\ \text{Component} * \textbf{Drive Train}\ \text{Component} * \textbf{Aero}\ \text{Component} * \textbf{Chassis}\ \text{Component})}$$

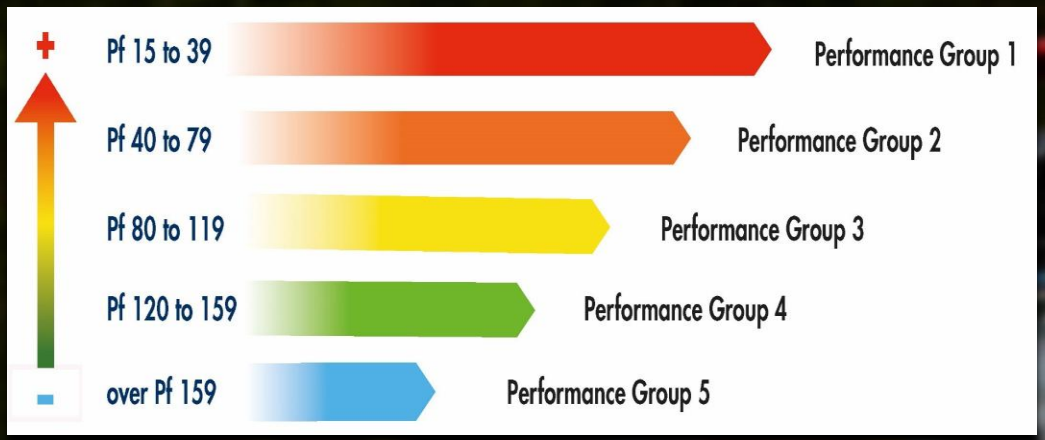
Each component is calculated using physical data supplied by the competitors about their car.

b) Pf Classification of cars

A car's **Pf** will determine the group it is in. SAMF can create classes within a group depending on the participation numbers and variety of cars

PERFORMANCE FACTOR (Pf)

Pf classification

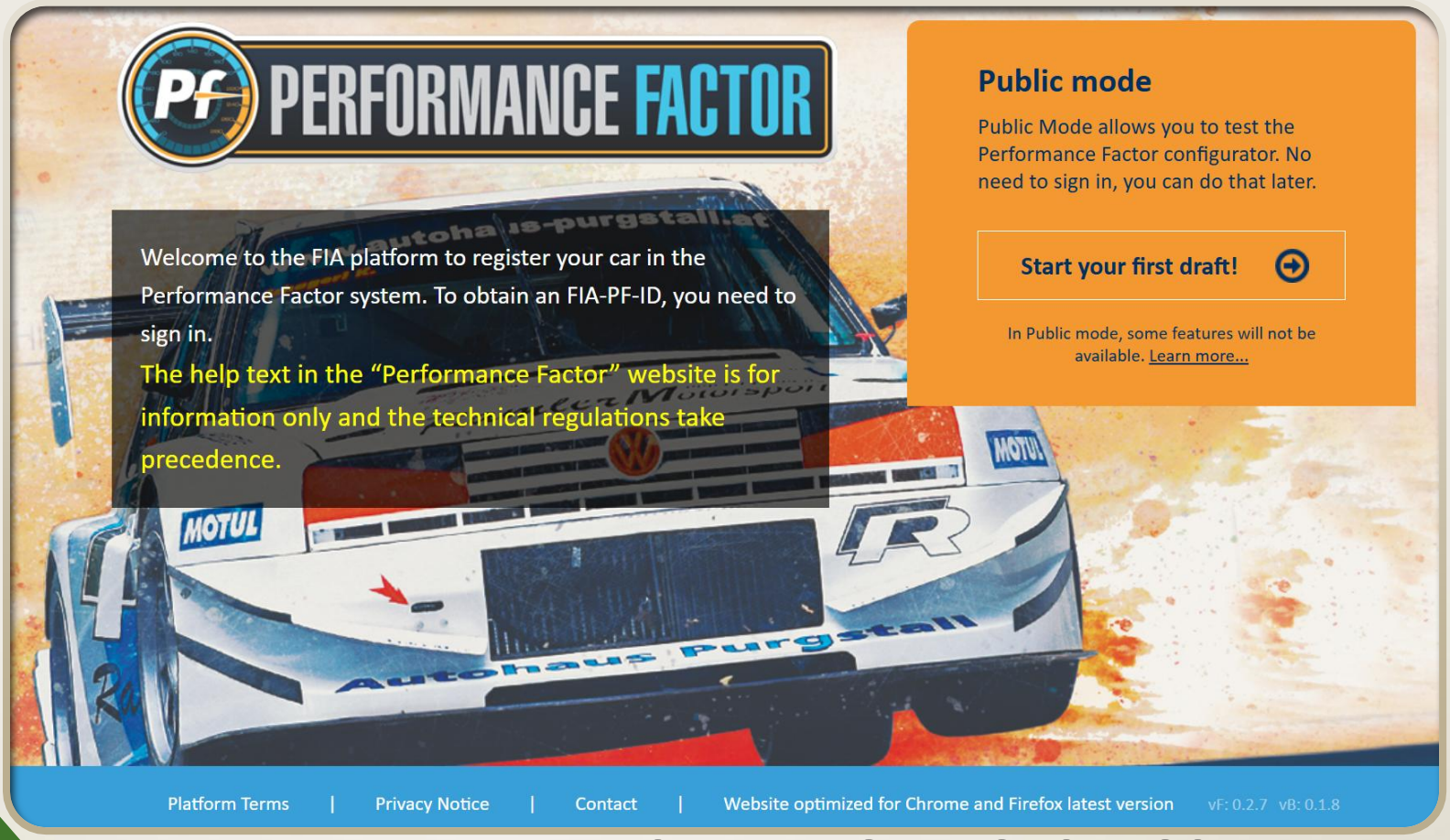


SAMF can create 2 classes within a Group

<u>For example</u>, Group 1 covers cars with Pf between 15-39, SAMF can create two classes within Group 1, Class 1 (Pf 15-25) and another Class 2 (Pf 16-39). Therefore car with Pf 26 for example, would be in Group 1 class 2.

Pf Website Access

The FIA **Pf** website will be accessible to: all parties, including the general public/press. Competitors will be able to use this website to see how different combinations of technical specifications change the car's performance. Competitors will be able to make changes to their cars well in advance of race day in order to decide competing in one group or the other.



WWW.FIAPERFORMANCEFACTOR.COM

FIA PfWEBSITE

a) The FIA **Pf** website will provide a platform to input, manipulate and provide information to all groups requiring access to the information.

a) The competitor will have access to the FIA Pf website where they will fill out an electronic 'Declaration Form' by entering data describing their car and declaring it is correct. If there is a modification to the car during the season they can input the change into the FIA Pf website and the new Pf will be logged.

c) Organisers can access the same FIA **Pf** website to check the cars entered their event. The classification of these cars will be done automatically using the data the competitor entered

d) Stewards can handle protests or scrutineers' reports quickly with the requirement for only physical checks. The results can therefore be verified and released more easily.

What is next?

a) Before the FIA Championship competitions (or during scrutineering), drivers and competitors from Category 1 (Saloon & production cars) and in Category 2 (single seaters & open wheel) will have to fill in the **Pf** form on the FIA **Pf** website.

SAMF will conduct an online meeting with all participants who wish to participate in the Hillclimb season on day xxxxxxx at xxx hours to support competitors understanding the PF and the process, and for a Q&Q session. The link to this online meeting will be posted on Sportity app by the xxx of June.

b) The PF website is not available in Arabic language, as such, SAMF will be happy to dedicate a member to support a participant.

c) The FIA Pf website will be accessible during the conference call to demonstrate to the competitors how potential car changes affect the Pf classification.

SCRUTINEERS

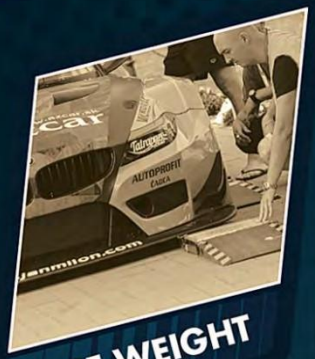
a) The SAMF appointed scrutineers will be trained how the **Pf** classification will be used and how the FIA **Pf** website could facilitate and enhance their checking ability. They will be able to check the following:

- Check car data to confirm correct classification;
- See reports on the car from preceding events.
- Conduct technical checks at their own discretion to validate certain parameters that were filled by the competitor.

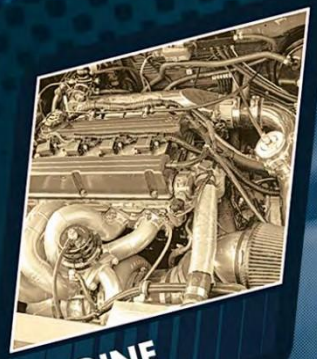
b) Scrutineers can input notes into a car's data file relating to the specific event.

c) The Head scrutineer/FIA technical representative can at any point in time change the **Pf** of a competitor based on the findings of the scrutineer. In case of dispute by the competitor, head of scrutineering and the race director will jointly make the decision

PERFORMANCE FACTOR



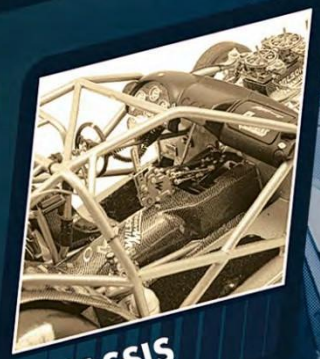
RACE WEIGHT



ENGINE

DRIVE TRAIN

AERODYNAMIC



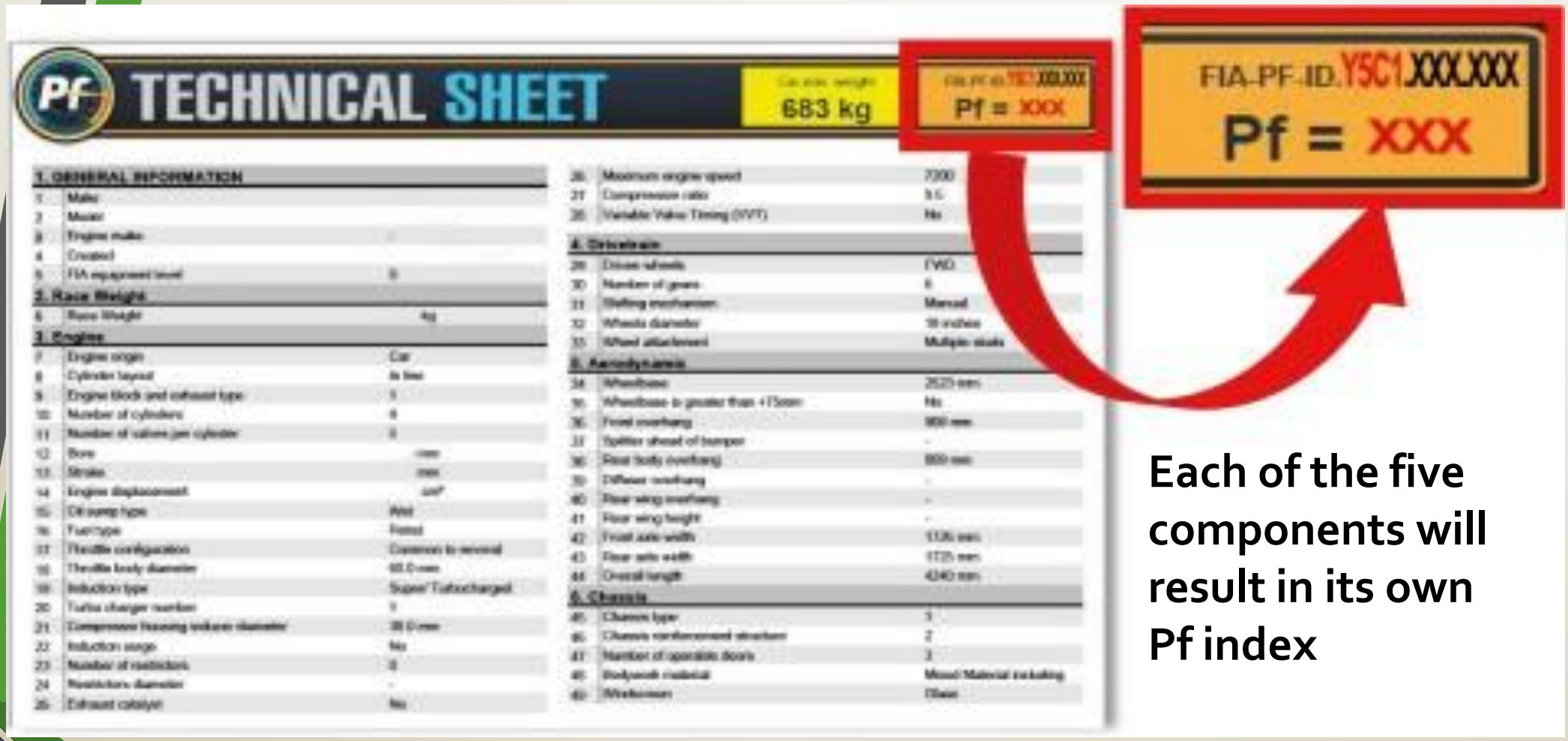
CHASSIS

The model calculates five components:

HILL CLIMB

Pf 37

PF MODEL ONLINE DATA



Each of the five components will result in its own Pf index

$$Pf = \frac{\text{Race Weight}}{(\textbf{Engine}\ \text{Component} * \textbf{Drive Train}\ \text{Component} * \textbf{Aero}\ \text{Component} * \textbf{Chassis}\ \text{Component})}$$

APPENDIX 1 - PERFORMANCE FACTOR / INPUT DATA FOR THE FIA Pf WEBSITE

1. GENERAL INFORMATION – *Appendix 1*

Input # 1

1	Entrant name	
2	Driver name	
3	Contact email	
4	Car - make	
5	Car - model	
6	Engine – make	

2. RACE WEIGHT- *Appendix 2*

Input # 2

7	Race weight	kg
	(weight of the car, driver and fluids incl.)	

3. ENGINE- *Appendix 3*

Input # 3

8	Origin	☐ Car ☐ Moto
9	Cylinder layout	☐ L ☐ V ☐ W ☐ H
10	No. of cylinders	
11	No. of valves *(total in the engine)*	
12	Bore	mm
13	Stroke	
14	Displacement	cm^3
15	Oil Sump type	☐ Dry ☐ Wet
16	Fuel type	☐ Petrol ☐ Diesel
17	Induction type	☐ Turbo / Supercharger ☐ Normally aspirated
18	No. of restrictors	
19	Restrictor inside diameter	mm

4. DRIVETRAIN- *Appendix 4*

Input # 4

20	Driven wheels position	☐ FWD ☐ RWD ☐ AWD
21	No. of gears	
22	Shifting mechanism	☐ Manual ☐ Sequential
23	Wheel diameter	Inches

5. AERODYNAMIC- *Appendix 5*

Input # 5

24	Wheelbase	mm
25	Front overhang (max)	mm
26	Splitter ahead of bumper	mm
27	Rear overhang (max)	mm
28	Diffuser rearward of rear bumper	mm
29	Rear wing position rearward of rear wheel centreline	mm
30	Rear wing height above ground level	mm
31	Front width of car on front axle centreline	mm
32	Rear width of car on rear axle centreline	mm

6. CHASSIS – *Appendix 6*

Input # 6

33	Roll cage type *(see Appendix 4)*	☐ 1 ☐ 2 ☐ 3
34	Chassis structure type *(see Appendix 4)*	☐ 1 ☐ 2 ☐ 3 ☐ 4
35	No. of operable doors and rear hatch (if applicable)	☐ 2 ☐ 3 ☐ 4 ☐ 5
36	Fuel tank type	☐ Production ☐ FIA
37	Windscreen	☐ Glass ☐ Plastic

➡ **Pf**

APPENDIX 2. Weight

Race weight	kg
(weight of the car, driver and fluids incl.)	

Total Weight of the car in race ready condition.

Includes weight of the car + Driver weight including safety equipment + All fluids including fuel

Competitors should weight their cars in this condition and fill the form.

All cars will be weighed during scrutineering with no exception. Drivers are responsible to have all their safety gear with them, fuel levels in the fuel tank according to their race day.

Cars will be in Parc Ferme after weighing them.

3. ENGINE

Origin Type	☐ Type 1 ☐ Type 2
Cylinder layout	☐ L ☐ V ☐ W ☐ H
No. of cylinders	
No. of valves *(Per Cylinder)*	
Bore	mm
Stroke	
Displacement	cm^3
Oil Sump type	☐ Dry ☐ Wet
Fuel type	☐ Petrol ☐ Diesel
Induction type	☐ Turbo / Supercharger ☐ Normally aspirated
Throttle Body	☐ Single ☐ One per cylinder
No. of restrictors	
Catalyst	Yes ☐ No
Maximum Engine Speed	

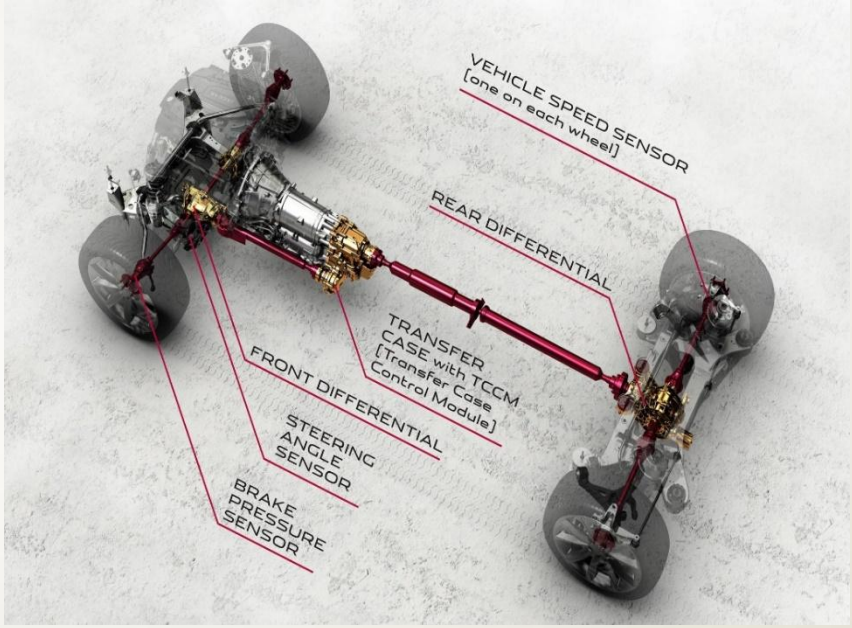
Internal engine measurements and variances have low impact on overall PF in general:

Scrutineers will have the tools required to measure any engine component. In case some of the data cannot be measured onsite, scrutineers and technical experts will determine the reasonability of the information based on their own research (for example displacement).

Data such as throttle body diameter, turbocharger compressor inducer size, catalytic converter etc.. Can, and will be measured on site at the discretion of scrutineers.

APPENDIX 3 – DRIVETRAIN

4. DRIVETRAIN	
Input #	
Driven wheels position	☐ FWD ☐ RWD ☐ AWD
No. of gears	
Shifting mechanism	☐ Manual ☐ Sequential
Wheel diameter	Inches
Wheel Attachment	



Straightforward data calculated by the Pf model automatically

A Sequential gearbox for example has a multiplier of 1.1 (10%) vs. Manual gearbox

RWD has a multiplier of 1.1x (10%) vs. Front wheel drive
AWD has a multiplier of 1.3x (30%) vs. Front wheel drive

APPENDIX 4

AERODYNAMIC COMPONENT DIMENSION DEFINITION

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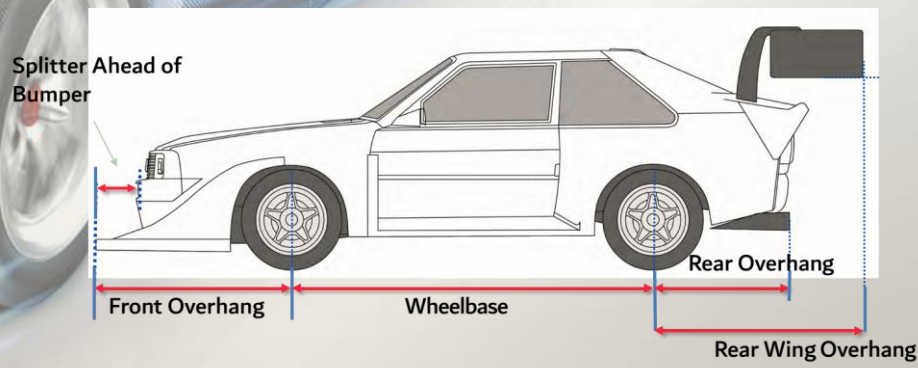
APPENDIX 4 – AERO COMPONENTS

4. AERODYNAMIC

Input # 5

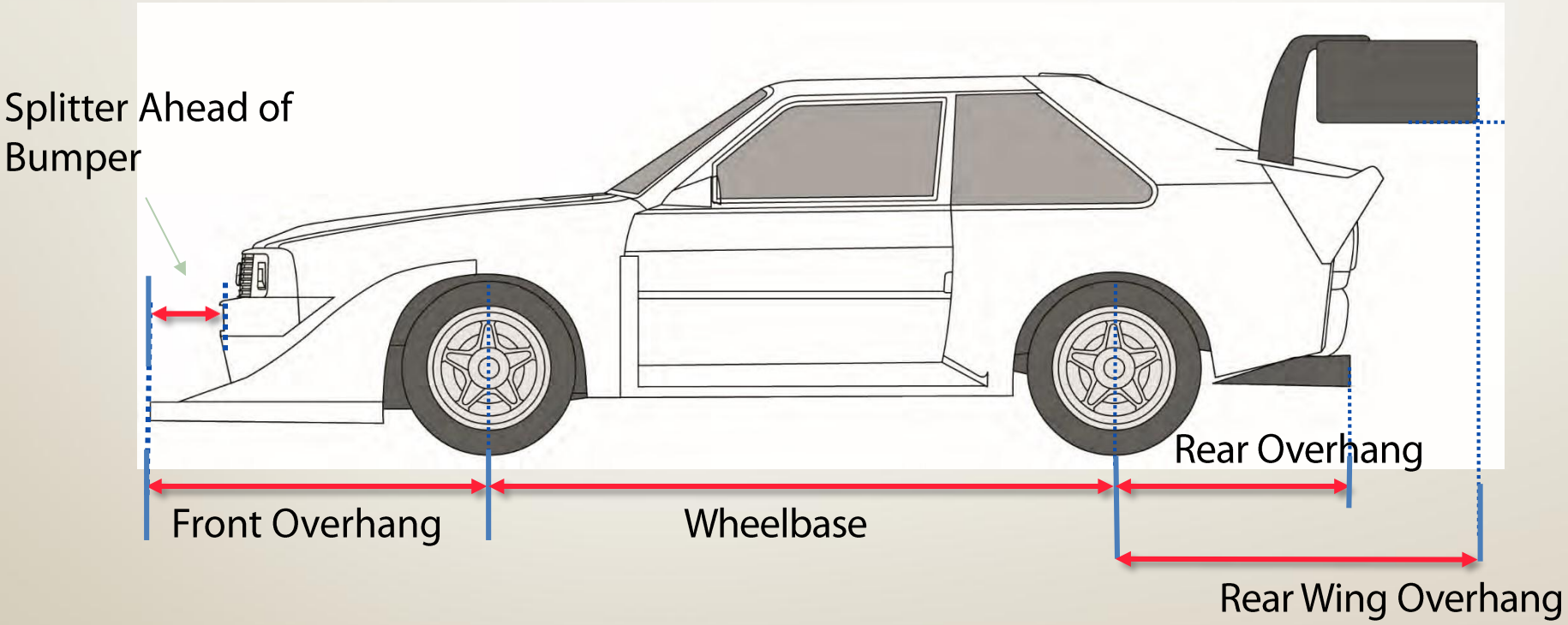
Wheelbase	mm
Front overhang (max)	mm
Splitter ahead of bumper	mm
Rear overhang (max)	mm
Diffuser rearward of rear bumper	mm
Rear wing position rearward of rear wheel centreline	mm
Rear wing height above ground level	mm
Front width of car on front axle	mm
Rear width of car on rear axle	mm
Overall length	mm

- All calculations are straightforward, the diagrams in next slides help with measurement technique.
- Scrutineers will perform random checks on any component they want and modify the PF accordingly
- The diagrams in the next pages help with explanations about the different measurements



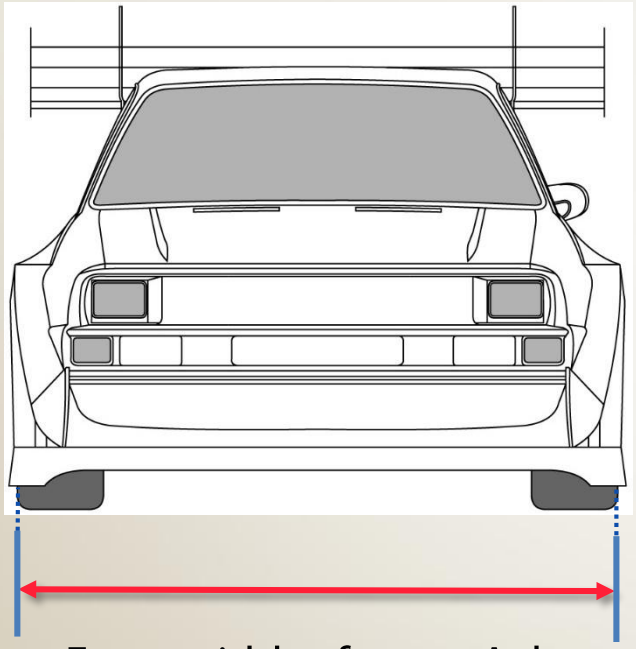
EXPLANATIONS ON HOW TO MEASURE ARE AVAILABLE BY CLICKING ON THE SMALL BLUE SQUARES ON THE LEFT OF EACH DATA POINT ON THE WEBSITE

APPENDIX 4- AERODYNAMIC COMPONENT DIMENSION DEFINITION

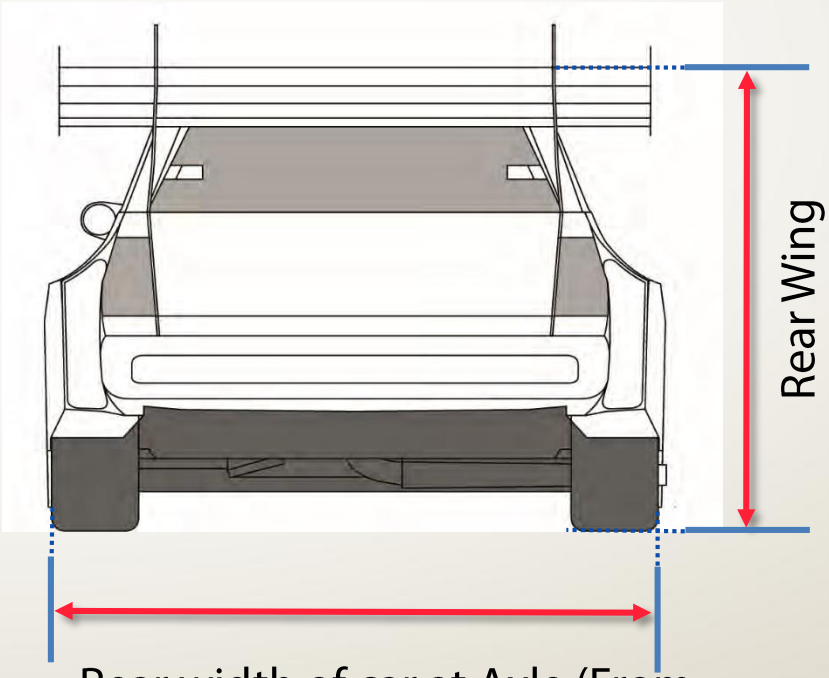


APPENDIX 4 - AERODYNAMIC COMPONENT DIMENSION DEFINITION

Aerodynamic Component Dimension Description



Front width of car at Axle (From outside tire to outside tire touching the ground)



Rear width of car at Axle (From outside tire to outside tire touching the ground)

APPENDIX 5

CHASSIS COMPONENT CLASSIFICATION

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APPENDIX 5 – CHASSIS

6. CHASSIS

Input #

Chassis type *(see next slides)*	☐ 1 ☐ 2 ☐ 3
Chassis reinforcement structure (see next slides)	☐ 1 ☐ 2 ☐ 3 ☐ 4
No. of operable doors and rear hatch (if applicable)	☐ 2 ☐ 3 ☐ 4 ☐ 5
Bodywork material	☐ Metallic only ☐ Mixed including composite
Windscreen	☐ Glass ☐ Plastic

2 Points roll bars are not permitted!!

Chassis Type (more info on next slide)

All saloon cars, GT cars, production cars are type 1

Single seaters with chassis made from composite or tubular frame classify as type 2

Chassis Reinforcement structure

Type 1: All 4 points roll cages and most 6 points roll cages Next slide drawings 253.1 -253.16

Type 2: 6 points roll cages with additional reinforcement braces in the rear, top or front mounting points directly between one or both axle strut towers

Type 3: Additional reinforcements welded to the main body (central volume)

Type 4: All single seater cars + Saloon cars with reinforcements under main body

Chassis structure classification

CS1	**Chassis structure Class 1**	*4/6 points cages with no extra structural members*
CS2	**Chassis structure Class 2** *Structural member(s) between one or both axle strut towers without intermediate connections.*	 
CS3	**Chassis structure Class 3** *Additional structural member(s) to those described in CS2 within the central structural volume.*	  *CS3 additional structure interna*

Chassis structure classification

CS4

Additional structural member(s) to members described in CS2 and CS3 outside the central structural volume

Additional underbody reinforcements

NEXT STEPS *Registration and competitor PF process*

Before Registration	Participant to Login to www.Fiaperformancefactor.com Register as new user and fill all personal data Add new car and name it per your registration to the event Fill in all required information in the five required categories When in doubt, call SAMF representative or email us Finalize the PF calculation Save your draft, if you are satisfied, create an FIA ID after payment of 25USD.
Registration	Download the PDF file and send it to SAMF at the following email: xxxx@Samf.gov.sa Register for Race on SAMF website and include the FIA Pf Sheet **It's mandatory to submit the form to SAMF during the online registration**
Post-Registration	SAMF will acknowledge by email receipt of your submission. SAMF will review all applications and might contact the participant in case they notice data that might be clearly incorrect. It is the responsibility of the competitor to make sure all data is accurate. 7 Days after closing the submission deadline, SAMF will publish on Sportity the list of names with PF for every participant, group and class. This will be called "Draft Competitors PF" No complaints from any participant will be entertained about their own classification or another competitor
Race Day	Scrutineers will have competitors' lists printed. Random checks will take place at their own discretion. Head scrutineer will have the authority of making any changes to the PF of any competitor No participant can dispute the decision of the Head scrutineer. Participant can request the presence of the race director to address a complaint paying SR50 The final decision is made unilaterally by the Race Director. Participants cannot under any circumstance dispute the decision, except through the official channel according to FIA regulation and paying the official fee

General Support: members@samf.gov.sa

PF Technical Support: scrutineer@samf.gov.sa

Telephone number: +966 59 123 1968

THANK YOU

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