HILL CLIMB

PERFORMANCE FACTOR (Pf)
CONCEPT OF CAR CLASSIFICATION

EXPLANATION AND REQUIREMENTS FOR 2018 EVENTS

A WORLD IN MOTION

FEDERATION
INTERNATIONALE
DE L'AUTOMOBILE

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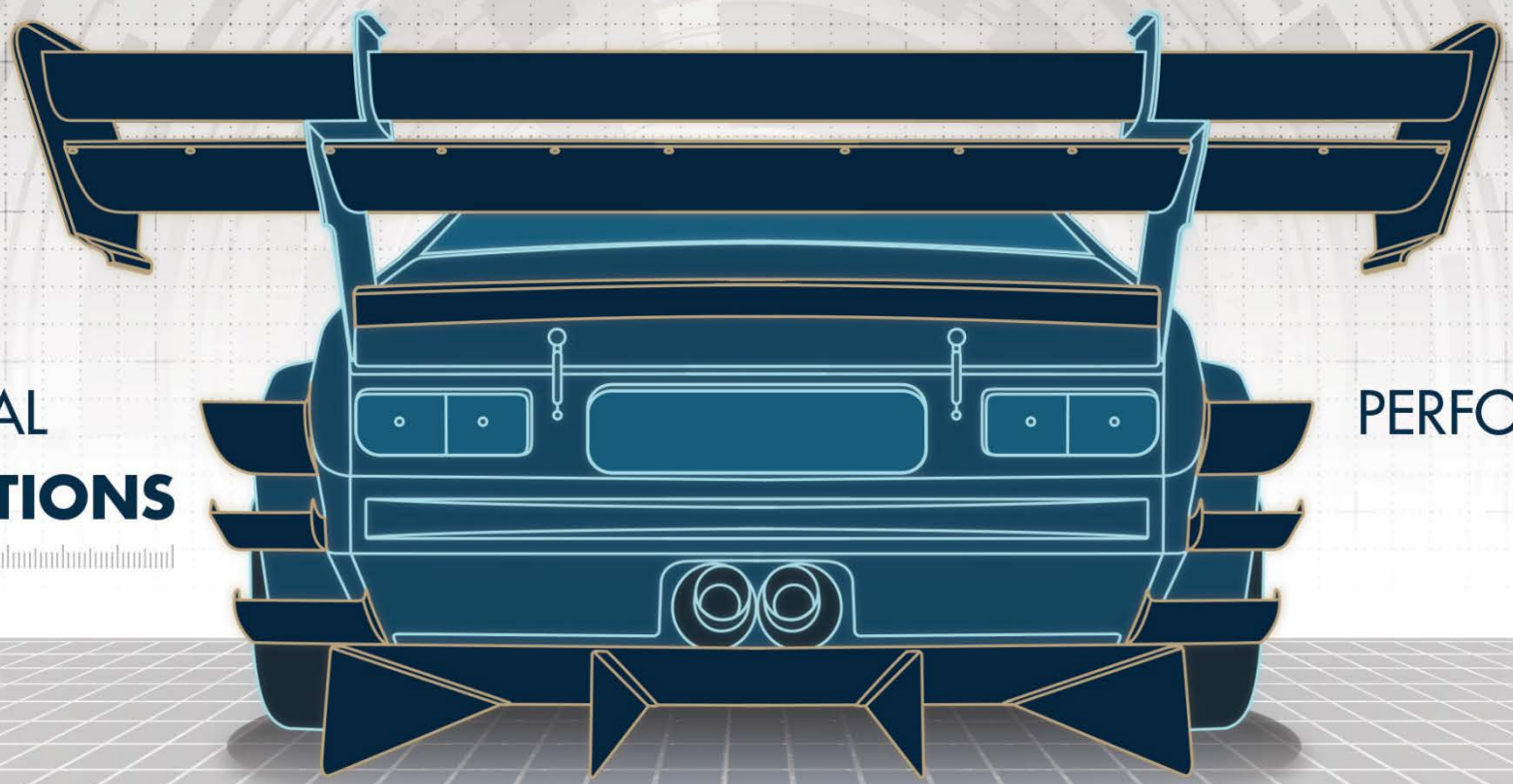
ORGANISERS (issue 2) / 10-03-2018

HILL CLIMB



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LOOKING ***TO THE FUTURE***

CONTENTS


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INTRODUCTION

The Performance Factor (**Pf**) concept is designed to classify a diverse range of 'production based' cars for all hill climb competitions. The objective is to simply combine the technical features of a car to determine the class it will compete in. This process will be independent of the car's previous homologations, one-make series build specification or previous competition history.

This will allow cars previously unable to be used in FIA Hill Climbs to be returned to active competition and allow a larger variety of new cars to be proposed for entry.

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 of the meeting can resolve technical protests at an event without reference to paperwork from other championships/homologations, etc.

The 2018 objective is to prove the **Pf** concept can work, so that the FIA Hill Climb Commission can make a decision on its suitability and recommend using it in the 2019 season.

PERFORMANCE FACTOR (Pf)

The **Pf** is derived from physical data input by the competitor to describe the car being entered. This involves using the data for calculations and checks against qualifying 'exceptions' that limit the class a car may compete in.

a) The goal is for the **Pf** to use the FIA Database as shown in *Table 1*.

Table 1

FIA Database Features	
FIA Database Operation	Comment.
Input Car Data	Competitor enters data for his/her car.
Calculation	FIA Database uses input data to calculate a Pf number.
Output	The competitor is put into a class using the Pf number.

PERFORMANCE FACTOR (Pf)

b) Calculation

The **Pf** calculation is as follows:

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

Each component is calculated using physical data supplied by the competitors about their car.
The resulting number (**Pf**) is used to place the car in a class.

c) The minimum weight of a car cannot be less than the weight as described in Appendix J Article 277.3 for Category I.

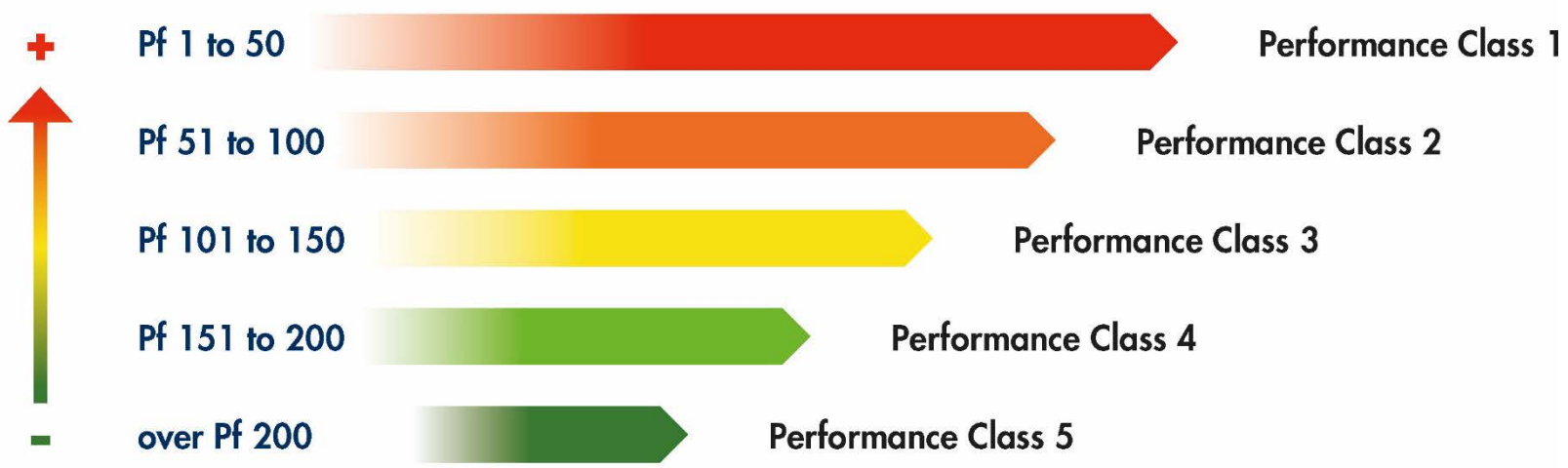
d) Pf Classification of cars

A car's **Pf** will determine the class it is in.

For example, Class 1 contains the higher performance cars with a **Pf** number in the range of 0-50. Higher numbered classes will contain lesser performing cars. The number of classes will be determined according to the Pf number 'window' to be decided.
Data gathered from the 2018 events will be part of this evaluation process.

PERFORMANCE FACTOR (Pf)

Pf classification (example)*



**values, terminologies and classifications published only by way of general guidance*

d) Phone App

In addition to the FIA Database, a stand-alone phone app will be developed: all parties, including the general public/press, will be able to use this app to see how different combinations of technical specifications change the car's performance. Similar to preparing a car in a motor sport video game.

PERFORMANCE FACTOR

RACE WEIGHT

ENGINE

DRIVE TRAIN

AERODYNAMIC

CHASSIS

HILL CLIMB

Pf 37

PROJECT TIMING

During 2018

The **Pf** is to be trialled at a series of FIA Hill Climb events listed in Table 2, concentrating on the FIA Championship events and one FIA Cup race.

Type of Test Events

Ghost events

These will be events where the car data will be gathered using local workers and used in a virtual event that parallels the real FIA event. These ghost events will be used to help educate and inform organisers, competitors, officials and stewards on the **Pf** concept and gather data on potential challenges at specific events.

Major events

Three of these will be major events run 'live' with results appearing at some position at the event and on the internet. This will require a larger team to deal with the technical and media requirements.

In 2019

The aim is to implement the **Pf** system for the full FIA Championship and Cup.

Table 2

FIA Test Events in 2018

Event		Date	Type of Test Event	Nr of FIA Personnel Attending
St Jean du Gard	FRA	13-15/04	*Ghost*	2-3
Rechberg	AUT	20-22/04	*Ghost*	1
Rampa Int. da Falperra	PRT	11-13/05	*Ghost*	1
Subida Int. al Fito	ESP	18-20/05	➡ **Major**	3-4
Ecce Homo Sternberk	CZE	01-03/06	*Ghost*	1-2
ADAC Glasbachrennen	DEU	08-10/06	*Ghost*	1
Trento Bondone [*FIA Cup*]	ITA	30/06-01/07	➡ **Major**	3-4
Dobsinsky kopec	SVK	20-22/07	*Ghost*	1
Limanowa	POL	27-29/07	*Ghost*	1
St. Ursanne	CHE	17-19/08	*Ghost*	1
GHD Petrol Ilirska Bistrica	SVN	31/08-02/09	*Ghost*	1
Buzetski dani	HRV	14-16/09	➡ **Major**	3-4

FIA DATABASE

Multiple levels of access will be required to cater for the different user groups.

The FIA Database must be useable for these users as described below in Data Output.

The results of testing the system in 2018 will help the FIA to understand how to implement the concept in 2019.

Data Output			
User Group	Use of Performance Factor (Pf) Data Output	Access Allowed by User Group	
		Pf Number	Input Data
Competitors	The **Pf** of the competitor's own car and the class the car qualifies for	**YES** *for the competitor's car only*	**YES** and can alter the data for the competitor's car only
Scrutineers	Use data to check the car at an event	**YES** for all cars	**YES** visual access only for all cars *[A unique scrutineer comment sheet will be used for their input]*
Organisers	**Pf** used to arrange cars into appropriate classes	**YES** for all cars	**NO**
Timekeepers	Results use classes determined by **Pf**	**YES** for all cars	**NO**
Stewards	Access to appropriate car data if relevant to a protest	**YES** for all cars	**YES** visual access only for all cars

FIA DATABASE

a) The FIA Database is an ideal addition to the concept because it will provide a platform to input, manipulate and provide information to all groups requiring access to the information.

b) The competitor will have an access point to the FIA Database where they will fill out an electronic 'Declaration Form' by entering data describing their car and declaring it is correct. Once they have entered this data, subsequent events will require minimal input. If there is a modification to the car during the season they can input the change into the FIA Database and the new Pf will be logged.

c) Organisers can access the same FIA Database to check the cars entered into their event. The classification of these cars will be done automatically using the data the competitor entered and declared accurate, thus saving the organiser time before the event.

Organisers can run national classes within the FIA competitions that can be 'isolated ' for local prizes using the FIA Database if requested.

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

FIA REQUIREMENTS FOR EACH EVENT

The following will be required from the organiser to support the type of event and number of FIA personnel attending each event described in *Table 2*.

GENERAL REQUIREMENTS FOR ALL EVENTS

- ✓ Internet access.
- ✓ Live timing access in format specified by FIA.
- ✓ Race weight checks.
- ✓ Area to present the **Pf** to organisers/ officials/ competitors.
- ✓ Dedicated translator.

GHOST EVENTS

- ✓ Dedicated room or work area with internet access (1-2 people).

MAJOR EVENTS

- ✓ Dedicated room with internet access, mobile phone signal, power and timing information for the full FIA test team and equipment (3-4 people).
- ✓ Local support (one dedicated timekeeper in charge of issuing the **Pf** results and documents).
- ✓ Output screen area where competitors/officials and the public can see results 'live'.

COMPETITORS

a) During these Ghost events, FIA personnel will engage local competitors to help them fill out the 'Declaration Form' and introduce them to the **Pf** concept. By doing this, the FIA personnel will gather the following information and help disseminate information about **Pf** to the end users.

- Entrant information;
- Car information;
- Driver equipment information.

b) Access to multi-lingual information will be important and this is why a dedicated translator will be required.

c) It is also hoped that the phone app / website will be working to demonstrate to the competitors how potential car changes affect the **Pf** classification.

SCRUTINEERS

a) During the event, the scrutineers will be shown how the **Pf** classification will be used and how the FIA database could facilitate and enhance their checking ability. They will be able to check the following to aid their technical checks:

- Check car data to confirm correct classification;
- See reports on the car from preceding events.

b) Scrutineers can input notes into a car's data file relating to the specific event. FIA personnel will demonstrate this data access and input procedure.

COMPARISON / ELIGIBLE CARS

THE FOLLOWING PAGES ILLUSTRATE A SAMPLE OF POTENTIAL HILL CLIMB CARS AND COMPARE THEIR 2017 ELIGIBILITY WITH THEIR POTENTIAL 2019 ELIGIBILITY.

COMPARISON OF CARS ELIGIBLE FOR 2017 FIA EUROPEAN HILL CLIMB CHAMPIONSHIP AND THEIR POTENTIAL ELIGIBILITY FOR 2019 LIST (NOT EXHAUSTIVE)

Organisers can get a larger variety of entries into the FIA Competition with the use of the **Pf**. Examples are in the table below.

Car	2017		2019	Pf Specifications		
 Mitsubishi Lancer Evo IX	ELIGIBLE Category I Group N	➡	ELIGIBLE Category I	*2 l. Turbo*	*4WD*	*1400kg*
 Honda Civic	ELIGIBLE Category I Group N	➡	ELIGIBLE Category I	*2.0 l. N/A*	*FWD*	*1200kg*
 Citroën DS3 R1	ELIGIBLE Category I Group A (R3T)	➡	ELIGIBLE Category I	*1.6 l. N/A*	*FWD*	*1095kg*
 Honda Integra Type R	ELIGIBLE Category I Group A	➡	ELIGIBLE Category I	*1.8 l. N/A*	*FWD*	*1250kg*
 Audi Sport Quattro	NOT ELIGIBLE Group E1	➡	ELIGIBLE Category I	*2.2 l. Turbo*	*4WD*	*1250kg*
 Lancia Delta Integrale EVO	NOT ELIGIBLE Group E1	➡	ELIGIBLE Category I	*2.0 l. Turbo*	*4WD*	*1200kg*
 Mitsubishi Lancer Evo VIII	NOT ELIGIBLE Out of Group A homologation	➡	ELIGIBLE Category I	*2 l. Turbo*	*4WD*	*1325kg*
 Opel Kadett C V8 GT/R	Eligible in Category II Group E2-SH	➡	ELIGIBLE Category I	*5.7 l. N/A*	*RWD*	*1250kg*

Car	2017		2019	Pf Specifications		
 Mitsubishi Lancer Evo IX	Eligible in Category II Group E2-SH	➡	ELIGIBLE Category I	*2.0 l. Turbo*	*4WD*	*1380kg*
 Seat Léon Super Coppa	NOT ELIGIBLE Group FFSA/A	➡	ELIGIBLE Category I	*1.9 l. Turbo*	*FWD*	*1120kg*
 Peugeot 106 XSi	NOT ELIGIBLE Group FFSA/FN	➡	ELIGIBLE Category I	*1.4 l. N/A*	*FWD*	*925kg*
 BMW M3 E46 GTR	NOT ELIGIBLE Group FFSA/GTTS	➡	ELIGIBLE Category I	*3.2 l. Turbo*	*RWD*	*1200kg*
 BMW 320 WTCC	NOT ELIGIBLE Group E1	➡	ELIGIBLE Category I	*2 l. N/A*	*RWD*	*1180kg*
 Subaru Impreza WRX STI	NOT ELIGIBLE Group E1	➡	ELIGIBLE Category I	*2 l. Turbo*	*4WD*	*1300kg*
 Audi 80 Quattro	NOT ELIGIBLE Group E1	➡	ELIGIBLE Category I	*1.7 l. Turbo*	*4WD*	*1070kg*
 Honda Civic	NOT ELIGIBLE Group E1	➡	ELIGIBLE Category I	*1.6 l. N/A*	*FWD*	*1120kg*
 Peugeot 106 GTi	NOT ELIGIBLE Group E1	➡	ELIGIBLE Category I	*1.6 l. N/A*	*FWD*	*950kg*
 VW Scirocco	NOT ELIGIBLE Group E1	➡	ELIGIBLE Category I	*2.0 l. N/A*	*FWD*	*830kg*

COMPARISON OF CARS ELIGIBLE FOR 2017 FIA EUROPEAN HILL CLIMB CHAMPIONSHIP AND THEIR POTENTIAL ELIGIBILITY FOR 2019

LIST (NOT EXHAUSTIVE)

Car	2017		2019	Pf Specifications		
 Opel Kadett	NOT ELIGIBLE Group E1	➡	**ELIGIBLE** Category I	*2.3 l. N/A*	*RWD*	*980kg*
 Volvo TC10	NOT ELIGIBLE Group FFSA/GTTS	➡	**ELIGIBLE** Category I	*N/A*	*RWD*	*1150kg*
 Renault Williams BTCC	NOT ELIGIBLE BTCC	➡	**ELIGIBLE** Category I	*2.0 l. N/A*	*FWD*	*960kg*
 Suzuki Swift Sport 1.6	NOT ELIGIBLE Swift Cup	➡	**ELIGIBLE** Category I	*1.6 l. N/A*	*FWD*	*1130kg*
 Mitsubishi Mirage R5 WRT Evo2	NOT ELIGIBLE Group E1	➡	**ELIGIBLE** Category I	*2.0 l. Turbo*	*4WD*	*1270kg*
 BMW Mini JCW	NOT ELIGIBLE Group E1 *(Italian Starter Class – Racing start)*	➡	**ELIGIBLE** Category I	*1.6 l. Turbo*	*FWD*	*1130kg*
 Vauxhall Nova-Suzuki	NOT ELIGIBLE Group National ("class 1A - Bantam Saloon Class" / Irish Hill Climb Championship)	➡	**ELIGIBLE** Category I	*1.3 l. N/A*	*FWD*	*800kg*

** N/A Naturally Aspirated Induction*

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