



Balance of Performance Publication

Date: 11.04.2018

Hankook 12H NAVARRA 2018 (PROTOS & GT)

To Sporting & Technical Regulations 24H SERIES power by Hankook 2018, Version 28
September 2017, with KNAF-permit No.: 0314.17.266

Dear Teams and Drivers

In this BOP-publication you will find:

- Balance of Performance (BOP)
- SP-BOP-CAT (Theoretical best lap times).

Applicable for:

- Hankook 12H NAVARRA (24H PROTO SERIES + 24H GT SERIES)

This BOP and other figures are in force with immediate application and replaces the figures of appendix 18 of the Sporting & Technical regulations and eventually previously published BOP-publications.

Notes on boost control:

Control of Pboost strategy as per document attached (Appendix: Control of Pboost strategy), for all cars of which Pboost max is specified, **unless explicit otherwise specified.**

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Class GT4: GT4 Grand Touring Cars

Brand & Type	Cylinder capacity	Minimum Weight	Max Refuelling amount	Restrictor	Remarks
ASTON MARTIN V8 VANTAGE GT4	4700cc/8cyl	1350 kg	100 L	NA	ECU BOP 2016
Audi R8 LMS GT	5200cc/10cyl	1450 kg	100 L	2x42mm	Restrictor thickness 5mm. Acc. Audi R8 GT4 restrictor drawing ECU BOP 2018
BMW M3 GT4		1350 kg	100 L	NA	ECU BOP 2015
BMW M4 GT4	3000cc/6cyl Turbo	1460 kg	100 L	2017 USB Powerstick "Silver" (Max Engine power: 440Hp)	
CHEVROLET CAMARO GT4		1450 kg	100 L	60mm	FIA-restrictor design ECU BOP 2018
GINETTA G55 GT4 2015	3700cc/6cyl	1080 kg	100 L	NA	ECU BOP 2015
GINETTA G55 GT4 2017	3700cc/6cyl	1100 kg	95 L	2x47,5mm	Restrictor: G55-E0392 FIA-restrictor design
KTM X-BOW GT4	2000cc/4cyl Turbo	1130 kg	90 L	Pboost max: 2,3bar Max rpm: 7000 rpm (at all gears)	
LOTUS EVORA GT4		Tba	Tba	Tba	
MCLAREN 570S GT4	3800cc/8cyl Turbo	1440 kg	110 L	Max engine Torque 470Nm Pboost-max: 1,8 bar ECU BOP 2018	
MERCEDES AMG GT4	4000cc/8cyl Turbo	1450 kg	100 L	Pboost-max: 1,65 bar (Max Engine power: 325kW (442Hp)) ECU BOP 2018	
NISSAN 370Z GT4	3800cc/6cyl	1250 kg	100 L	Tba	ECU BOP 2016/2017
PORSCHE 997 CUP GT4	3800cc/6cyl	1250 kg	95 L	NA	ECU BOP 2014
PORSCHE CAYMAN GT4 CLUPSPORT MR	3800cc/6cyl	1290 kg	100 L	ECU 2017 BOP	
PORSCHE CAYMAN PRO4 GT4	3800cc/6cyl	1240 kg	95 L	NA	2016
SIN R1 GT4	6200cc/8cyl	1250 kg	100 L	NA	Max 43,5% Throttle opening
Your (GT) car not listed here? Please make an individual request to info@creventic.com					



Class 991: Porsche 991 Cup classes (Generation I and II)

Class	Brand & Type	Cylinder capacity	Minimum Weight	Max Refuelling amount	Remarks
Class 991-I	Porsche Cup 991-I	3.800 cc	1220 kg	100L	Models 2014 .. 2016 NO Restrictor-Blende
Class 991-II	Porsche Cup 991-II	4.000 cc	1220 kg	100L	Models 2017 .. 2018 *Restrictor-Blende: 72 mm

* Restrictor Blende must be according "Manthey TZN" drawing, see 24H Series bulletin

Class 991-BOP-TABLE

BOP- table class 991-PRO & 991-AM

Class*	Balance Of Performance**		Remarks
	Weight	Refuelling	
991-Am	+/- 0kg	100 L	BOP-advantage
991-Pro	+ 30kg	90 L	

* Class and corresponding BOP is determined by Team composition (Drivers categories)

Please note: In case Class 991-AM and 991-PRO is combined to one Class 991, the BOP, 991-AM-BOP or 991-PRO-BOP is still applicable determined by Team composition (Drivers categories)

** BOP adjusted (+/-) ballast weight and refuelling amount, referred to initial value specified in Appendix 18 (See BOP-publication of the specific event)

Class A6-BOP-TABLE

BOP- table class A6-PRO & A6-AM

Class*	Balance of Performance**		Remarks
	Weight	Refuelling	
A6-PRO	+ 30 kg	-/- 5 L	
A6-AM	+/- 0 kg	+/- 0 L	BOP-neutral*
	-/- 50 kg	120 L	BOP-advantage*

* Class and corresponding BOP is determined by Team composition (Drivers categories)

Please note: In case Class A6-AM and A6-PRO is combined to one Class A6, the BOP, A6-AM-BOP or A6-PRO-BOP is still applicable determined by Team composition (Drivers categories)

** BOP adjusted (+/-) ballast weight and refuelling amount, referred to initial value specified in Appendix 18 (See BOP-publication of the specific event)



GT cars (Mainly GT cars, also American GT's are eligible)

Class A6-Am & Class A6-Pro

Brand & Type	Cylinder capacity	Minimum Weight	Max Refuelling amount	Restrictor*	Remarks
ASTON MARTIN VANTAGE GT3	5900cc/12cyl	1280 kg	110 L	2x41,5mm	FIA-restrictor design
AUDI R8 LMS Ultra	5200cc/10cyl	1245 kg	110 L	2x47,2mm	up to and incl. 2014
AUDI R8 LMS (GT3-038)	5200cc/10cyl	1240 kg	100L	2x39,0mm	Or 1280kg/2x40mm (only for A6-AM) FIA-restrictor design
BMW Z4 GT3	4400cc/8cyl.	1230 kg	105 L	1x70,0mm	
CHEVROLET CORVETTE C6-ZR1	5500cc/8cyl.	1220 kg	100 L	2x31,6mm	LMGTE-2-04
DODGE VIPER CC SERIES 2	8400cc/10cyl	1280 kg	115 L	N/A	Chas #VCC-113
FERRARI 458 ITALIA GT3	4500cc/8cyl.	1260 kg	110L	2x50,0mm	FIA-restrictor design
FERRARI 488 GT3	3900cc/8cyl.	1300 kg	100L	N/A	Max Boost(barA/rpm) 1,47/4000 1,51/4500 1,56/5000 1,60/5500 1,63/6000 1,59//6500 1,54/7000 1,49/>7250
FERRARI F458GT (VdeV1)	4500cc/8cyl.	1230 kg	100 L	2x56,0mm	Chas #2850# Chas #2842#
Ford GT3 (Lambda)	5300cc/8cyl	1220 kg	105 L	1x58mm	FIA-restrictor design
LAMBORGHINI GALLARDO LP560 GT3	5200cc/10cyl	1205 kg	100 L	2x47,2mm	
LAMBORGHINI HURACAN GT3	5200cc/10cyl	1260 kg	100 L	2x39,0mm	FIA-restrictor design
MASERATI GRANTURISMO MC GT3	4700cc/8cyl.	1200 kg	105 L	1x65,0mm	
McLaren MP4-12C GT3	3800cc/8cyl.	1255 kg	115 L	2x36,0mm	Max Boost(barA/rpm) 1,82/4000 1,80/4500 1,78/5000 1,76/5000 1,72/6000 1,65//6500 1,59/7000 1,53/>7500
McLaren 650S GT3	3800cc/8cyl.	Tba	Tba	Tba	Max Boost(barA/rpm) Tba
MERCEDES SLS AMG GT3	6200cc/8cyl.	1330 kg	105 L	2x38,0mm	FIA-restrictor design
MERCEDES AMG GT3	6200cc/8cyl.	1330 kg	105 L	2x36,0mm	FIA-restrictor design
NISSAN GT-R GT3	3800cc/6cyl.	1315 kg	115 L	2x40,0mm	Up to and incl. 2014 Max Pboost 2,05 barA (all rpm)
	3800cc/6cyl.	1280 kg	110 L	2x40,0mm	EVO 2015 Max Pboost 2,0 barA (all rpm)
PORSCHE 997 GT3 R	4000cc/6cyl.	1205 kg	100 L	1x72,0mm	MY2012 or older
	4000cc/6cyl.	1205 kg	100 L	1x60,0mm	MY2013
PORSCHE 991 GT3 R	4000cc/6cyl.	1245 kg	95 L	2x41,5mm	FIA-restrictor design
RADICAL SPORTSCARS RXC TURBO GT3	3500cc/6cyl.	Tba	Tba	Tba	Max Boost(barA/rpm) Tba
RENAULT SPORT RS01 Configuration BOP GT3	3800cc/6cyl.	1220 kg	105L	2x42,0mm	Max Pboost 1,95 barA (all rpm) See also appendix Renault RS01 aerodynamics
SCG 003C	3500cc/6cyl.	1260 kg	115 L	2x35,0mm	Max Pboost 1,95 barA (all rpm)
SRT VIPER GT3-R	8400cc/10cyl	Tba	Tba	Tba	

Your (GT) car not listed here? Please make an individual request to info@creventic.com

* FIA-restrictor design, according FIA-2013/2014/2015/2016/2017/2018 restrictor design



Class SPX Special cars

Class SPX-BOP-Table with (partly) fixed BOP

Brand & Type	Cylinder capacity	Minimum Weight	Max Refuelling amount	BOP*	*In case car will be amalgamated to class A6. Initial BOP will be:
LAMBORGHINI Huracan Super Trofeo	5200cc/10cyl	1275 kg	*According BOP-table below	2x41,0mm	1275kg/110L/2x42 mm
Porsche GT America	4000cc/6cyl	1250 kg	*According BOP-table below	N/A	TBA
Porsche 911 GT3 Cup model (991-I) Modified	3800cc/6cyl	1200 kg	*According BOP-table below	Restrictor-blende: Free	TBA
Porsche 911 GT3 Cup model (991-II) Modified	4000cc/6cyl	1250 kg	*According BOP-table below	Restrictor-blende: Free	TBA
Porsche 991 Cup MR	4000cc/6cyl	1250 kg	*According BOP-table below	Restrictor-blende: Free	TBA
Vortex 1.0	6200cc/8cyl	1100 kg	*According BOP-table below	N/A	1100kg/105 L
KTM X-bow (SPX-special)	2000cc/4cyl.	1000 kg	*According BOP-table below @ column 1050 kg	Pboost max is 2,7bar (independent of ambient air pressure) Max rpm 7000 at all gears Ride height is free	1000kg/120L Pboost max is 2,7bar (independent of ambient air pressure) Max rpm 7000 at all gears Ride height is free

Class SPX-BOP-Table (for this class "Dynamic BOP" is applicable)

Class	SP-BOP-CAT Theoretical Best lap time Category	Minimum Weight 1050 kg	Minimum Weight 1150 kg	Minimum Weight 1250 kg
SPX	1min40 Navarra (range 1.40 – 1.41)	60 L	70 L	80 L
	1min41 Navarra (range 1.41 – 1.42)	70 L	80 L	90 L
	1min42 Navarra (range 1.42 – 1.43)	80 L	90 L	100 L
	1min43 Navarra (range 1.43 – 1.44)	90 L	100 L	110 L
	1min44 Navarra (range 1.44 – 1.45) *Initial Max refuelling amount	100 L	110 L	120 L
	1min45 Navarra (range > 1.45) **BOP-advantage	240 L (120 L @ green 120 L @ code60)	240 L (120 L @ green 120 L @ code60)	240 L (120 L @ green 120 L @ code60)

* This is the initial Max refuelling amount, all teams in class SPX starts with.

** As generally it is difficult or in many occasions not possible to give a car a BOP advantage, also the following BOP can be assigned (according art. 4 chapter II), this is called BOP-advantage.

- E.g. 240 L, meaning:
- 120 L under green, as max refuelling capacity is basically 120 litres
- 120 L during Code 60 (as 120L is 50% of 240). The advantage is obviously.



Class SP2 Special cars

Class SP2-BOP-Table

Porsche 997 3800cc: Fix BOP for accepted (modified) models.

- Minimum weight: 1200kg / Restrictor-Blende: 65mm
- Ride Height is free
- Refuel amount according SP2-BOP-Table

Porsche 997 3600cc: Fix BOP for accepted (modified) models.

- Minimum weight: 1150kg / Restrictor-Blende: is free
- Ride Height is free
- Refuel amount according SP2-BOP-Table

GC Automobile V8: Fixed BOP

- Minimum weight: 1100kg
- Refuel amount according SP2-BOP-Table

KTM X-bow (SP2-Special): Fixed BOP:

- Minimum weight: 1000 kg
- Pboost max is: 2,3bar (independent of ambient air pressure)
- Max rpm: 7000 rpm (at all gears)
- The car must be equipped with a data logger including pressure sensor according art.4.10 of chapter II of the Sporting & Technical Regulations.
- Ride Height is free
- Refuel amount according SP2-BOP-Table

Class SP2-BOP-Table (for this class "Dynamic BOP" is applicable)

Class	SP-BOP-CAT Theoretical Best lap time Category	Max Refuelling amount		
		Minimum Weight 750 kg	Minimum Weight 1000 kg	Minimum Weight 1250 kg
SP2	1min45 Navarra (range 1.45 – 1.46)	70 L	80 L	90 L
	1min46 Navarra (range 1.46 – 1.47)	80 L	90 L	100 L
	1min47 Navarra (range 1.47 – 1.48)	90 L	100 L	110 L
	1min48 Navarra (range 1.48 – 1.49) *Initial Max refuelling amount	100 L	110 L	120 L
	1min49 Navarra (range > 1.49) **BOP-advantage	240 L (120 L @ green 120 L @ code60)	240 L (120 L @ green 120 L @ code60)	240 L (120 L @ green 120 L @ code60)

* This is the initial Max refuelling amount, all teams in class SP2 starts with.

** As generally it is difficult or in many occasions not possible to give a car a BOP advantage, also the following BOP can be assigned (according art. 4 chapter II), this is called BOP-advantage.

- E.g. 240 L, meaning:
- 120 L under green, as max refuelling capacity is basically 120 litres
- 120 L during Code 60 (as 120L is 50% of 240). The advantage is obviously.



Prototype Special cars Class P2

Brand & Type	Cylinder capacity	Minimum Weight	Max refuelling amount	BOP	Remarks
Ginetta G57-P2	6200cc/8cyl	900 kg	105 L		
Oreca 03	TBA	TBA	TBA		
Pescarolo 02	TBA	TBA	TBA		
Tampolli SR2	TBA	TBA	TBA		
Courage LC75	TBA	TBA	TBA		
Dallara SP1	TBA	TBA	TBA		
Your (P2-eligible) car not listed here? Please make an individual request to info@creventic.com					

Prototype Special cars Class P3

Brand & Type	Cylinder capacity	Minimum Weight	Max refuelling amount	BOP	Remarks
ADESS 03	5000cc/8cyl	900 kg	100 L		
Ginetta P3-15	5000cc/8cyl	900 kg	100 L		
Ligier JS P3	5000cc/8cyl.	900 kg	100 L		
Norma M30	5000cc/8cyl.	900 kg	100 L		
Riley-Ave P3	5000cc/8cyl.	900 kg	100 L		
Your (P3-eligible) car not listed here? Please make an individual request to info@creventic.com					

Prototype Special cars Class P4

Brand & Type	Cylinder capacity	Minimum Weight	Max refuelling amount	BOP	Remarks
Ligier JS P4	3700cc/6cyl.	940 kg	100 L	TBA	
Your (P4-eligible) car not listed here? Please make an individual request to info@creventic.com					

Class PX

Brand & Type	Cylinder capacity	Minimum Weight	Max refuelling amount	BOP	Remarks
Funyo SP05	1600cc/4cyl	TBA	TBA		
Praga R1T	2000cc/4cyl	TBA	TBA		2.0 Turbo
Radical RXC Turbo	3500cc/6cyl	TBA	TBA		
Radical RXC Turbo 500R	3500cc/6cyl	TBA	TBA		
Radical RXC V8	3000cc/8cyl	TBA	TBA		
Radical RXC Spyder	TBA	TBA	TBA		
Radical 3.7 V6	3700cc/6cyl	TBA	TBA		
Radical SR8 SX	2700cc/4cyl	TBA	TBA		
Renault R.S.01	3800cc/6cyl	TBA	TBA		Renault Sport Trophy
Wolf GB08 S	3000cc/8cyl	TBA	TBA		V8 Engine 3.0 L
Wolf GB08 T	1600cc/Turbo	590 kg	100 L	N/A	1.6 Turbo Open
Wolf GB08 SM T	1600cc/Turbo	TBA	TBA		1.6 Turbo Open
Your (PX-eligible) car not listed here? Please make an individual request to info@creventic.com					



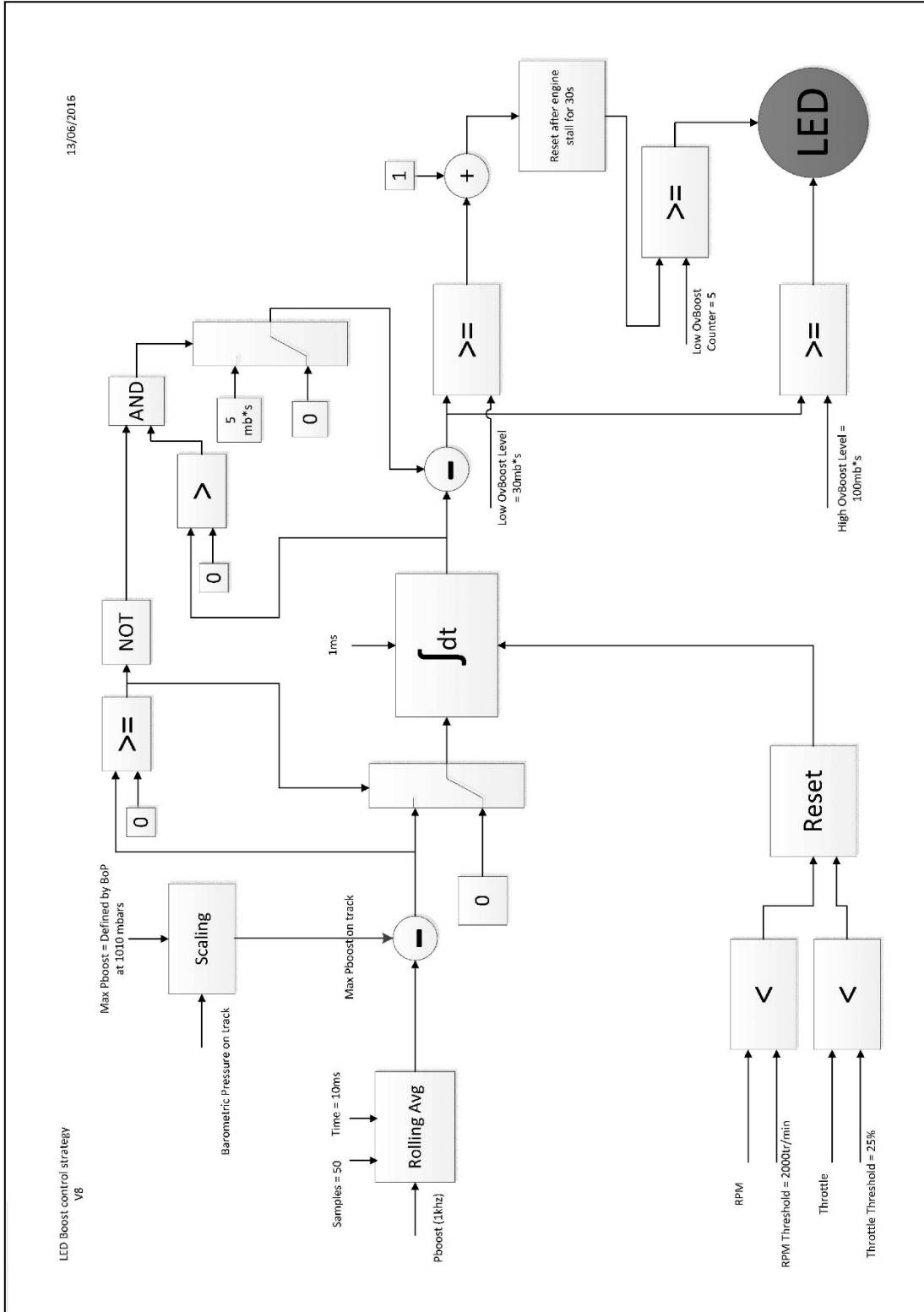
Class CN1 – Production Sports Cars

Brand & Type	Cylinder capacity	Minimum Weight	Max refuelling amount	BOP	Remarks
Aquila CR1	2000cc/4cyl	570 Kg	80L		
Caterham SP300R	2000cc/4cyl	570 Kg	80L		
Funyo 4 RC	2000cc/4cyl	570 Kg	80L		
Funyo 5	2000cc/4cyl	570 Kg	80L		
Gibson CN2012	2000cc/4cyl	570 Kg	80L		
Juno CN2011	2000cc/4cyl	570 Kg	80L		
Juno CN2012	2000cc/4cyl	570 Kg	80L		
Juno CN2016	2000cc/4cyl	570 Kg	80L		
Ligier JS53 EVO2	2000cc/4cyl	570 Kg	80L		
Lucchini P2	2000cc/4cyl	570 Kg	80L		
Merlin MP23	2000cc/4cyl	570 Kg	80L		
Norma M20 FC	2000cc/4cyl	570 Kg	80L		
Osella PA 21P Evo CN2000	2000cc/4cyl	570 Kg	80L		
Osella PA 21S Evo CN2000	2000cc/4cyl	570 Kg	80L		
Osella PA 2000 Evo E2B	2000cc/4cyl	570 Kg	80L		
PRC FPR 6	2000cc/4cyl	570 Kg	80L		
Radical SR3 RSX	1500cc/4cyl	570 Kg	80L		
Radical SR3 SL	2000cc/4cyl	570 Kg	80L		
Tiga CN2012	2000cc/4cyl	570 Kg	80L		
Tatuus PY012	2000cc/4cyl	570 Kg	80L		
Wolf GB08 CN	2000cc/4cyl	570 Kg	80L		
Wolf GB08 CN	1600cc/4cyl	570 Kg	80L	41,0mm	Supercharged engine, max. Pboost TBA
Your (CN1-eligible) car not listed here? Please make an individual request to info@creventic.com					

Eligible cars Class CN2 – Production Sports Cars

Brand & Type	Cylinder capacity	Minimum Weight	Max refuelling amount	BOP	Remarks
ADR 3 CN	2000cc/4cyl	570 Kg	80L		
AGM WLR	2000cc/4cyl	570 Kg	80L		
AJEC 01	2000cc/4cyl	570 Kg	80L		
BDN S3	2000cc/4cyl	570 Kg	80L		
Bicknell PS7	2000cc/4cyl	570 Kg	80L		
Chiron LMP3 CN	2000cc/4cyl	570 Kg	80L		
Gibson CN2012	2000cc/4cyl	570 Kg	80L		
Juno CN09	2000cc/4cyl	570 Kg	80L		
Ligier JS49	2000cc/4cyl	570 Kg	80L		
Ligier JS51	2000cc/4cyl	570 Kg	80L		
Norma M20	2000cc/4cyl	570 Kg	80L		
Radical SR1	1350cc/4cyl	520 Kg	80L		
Your (CN2-eligible) car not listed here? Please make an individual request to info@creventic.com					

Appendix: Control of Pboost strategy



Appendix: Renault RS01 aerodynamics



PHOTO N° 01

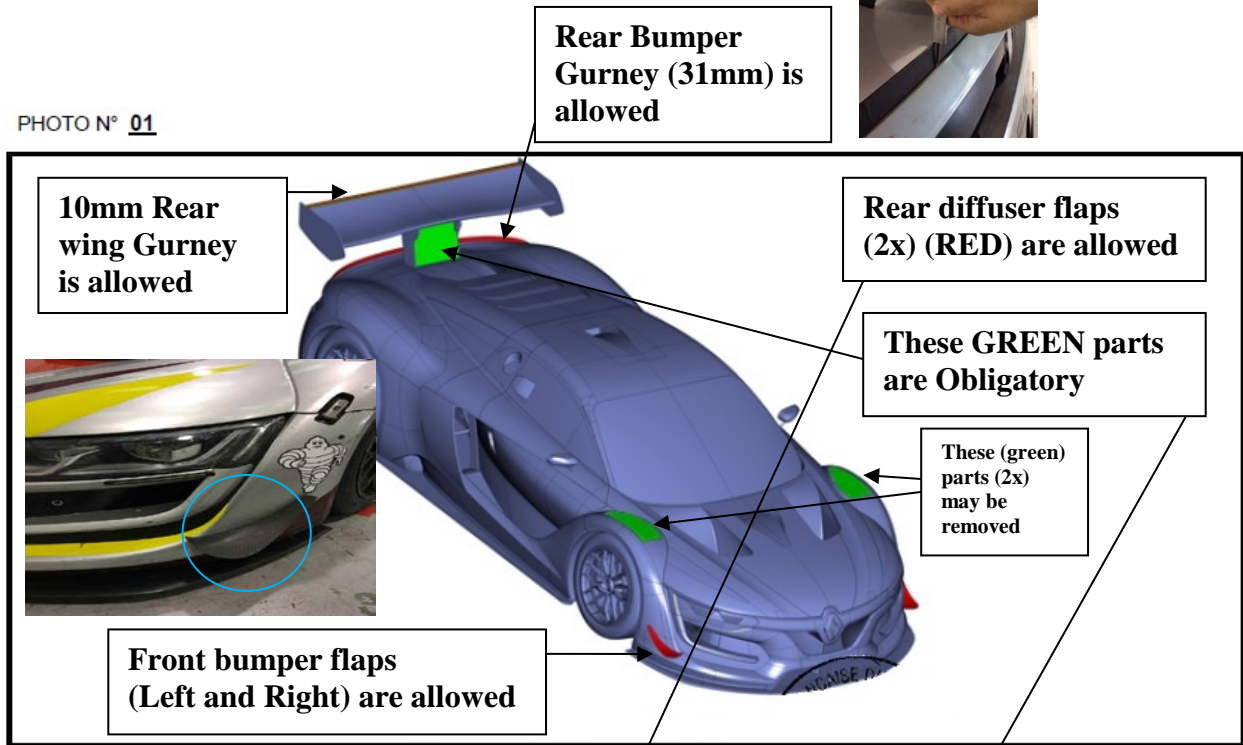


PHOTO N° 02

