



Balance of Performance Publication

Date: 25.10.2018

Hankook 24H COTA 2018 (TCE & GT-Series)

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).

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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Petrol & Diesel Touring cars, up to 3500cc

Class	Cylinder capacity		Minimum Weight	Max Refuelling amount	Remarks	
A2	Diesel cars up to 2000cc		1100 kg	100L	Theoretical best lap time: 2min26 (COTA)	
			1200 kg	120L		
	Petrol (up to - 2.000cc)	up to 1.300cc	710 kg	80 L		
		1.300 - 1.400cc	760 kg	80 L		
		1.400 - 1.600cc	820 kg	90 L		
		1.600 - 1.800cc	900 kg	100 L		
		1.800 - 2.000cc	980 kg	100 L		
	Petrol Supercharged engines (up to 1.650cc)	Supercharged engines up to 1.650cc	1000kg	70 L		
Peugeot RCZ 1.600cc / Turbo		1100 kg	80 L			
A3	Petrol (2.000 - 3.500cc)	2.000 - 2.500cc	1000 kg	120 L	Theoretical best lap time: 2min22 (COTA)	
		2.500 - 3.000cc	1100 kg	120 L		
		3.000 - 3.500cc	1200 kg	120 L		
	Petrol Supercharged engines (1.650 - 2.000cc)	Peugeot 208 GTI 1.600cc / Turbo	1050 kg	85 L		
		1.650 – 1.800cc	900 kg	100 L		e.g. Lotus Elise 1.8 Turbo
			1000 kg	120 L		e.g. Seat Leon MK1
		1.800 – 2.000cc	1000 kg	90 L		e.g. Seat Leon MK2, Opel Astra (NO TCR cars)
			1100 kg	100 L		
	Diesel 2.000 – 3000cc	2.000 – 2.500cc	1100 kg	85 L		
		2.500 – 3.000cc	1200 kg	85 L		
CUP 1	BMW M235i Cup	3.000cc Twin Turbo	Remarks	Remarks	According to BMW M235i Cup regulations	

Class TCR BOP and ECU-software version

Brand & Type	Minimum Weight	Max Refuel amount	Ride height	TCR Technical form Certification Nr. / Variant Option	Power level (%)	SW Name ECU-software version This version overrides the TCR TECH FORM	SW Identification (Checksum or ID)	Max Pboost* & Rev limiter
ALFA ROMEO GIULIETTA TCR	1220 kg	100 L	70mm	22 & VO23/31	102.5	1.600_TCR2018_BOP_102,5%	1828/1314	See TCR-13***
AUDI RS3 LMS SEQ	1250 kg	100 L	70mm	10 & VO18/25/29/45/72	100	5F6906259M	CVN	See TCR-09**
AUDI RS3 LMS DSG	1230 kg	100 L	70mm	9 & VO18/25/29/45/63	102.5	5F6906259L	CVN	See TCR-09**
CUPRA TCR SEQ	1240 kg	100 L	70mm	35 & VO44	100	5F6906259M	CVN	See TCR-09**
CUPRA TCR DSG	1230 kg	100 L	70mm	43 & VO44	102.5	5F6906259L	CVN	See TCR-09**
HONDA CIVIC FK7 TCR SEQ (2018)	1250 kg	100L	80mm	33 & VO34	97.5	TCR_H70_REV_1.02.33	97.5	See TCR-13***
HONDA CIVIC FK2 TCR SEQ (2017)	1250 kg	100L	80mm	11 & VO 20	100	TCR-V2.6.98+7.5	100	See TCR-13***
HYUNDAI i30 N TCR	1260 kg	100 L	90mm	27 & VO 28/76	97.5	V1.606.X1_i30_TCR_BOPv2_975_prod_003.LRC	24960/60966	See TCR-13***
						V1.606.X1_i30_TCR_BOPv2_975_Endurance_002	29867/60345	
KIA CEE'D TCR	1220 kg	100 L	70mm	24	100	1502_Kia_TCR_18_-100%v05	Firmware ID	See TCR-13***
LADA VESTA TCR	1270 kg	100 L	80mm	38	100	12.10.1.3	BF5C3864h	See TCR-13***
							BF5C3800h	
OPEL ASTRA TCR	1230 kg	100 L	70mm	5 & VO77	100	12.7.3.30_Bop2_100-prozent	4B22B3F6A366C34Ah	See TCR-13***
PEUGEOT 308 TCR	TBA	TBA	TBA	37	102.5	Soft 12.10.3.0	8D5EDC65h	See TCR-13***
PEUGEOT 308 RACING CUP	1100 kg	100 L	70mm	8 & VO78	90	T9TCR_12.8.4.7_17S15_90%	3D47360C	2750mbar
RENAULT MEGANE TCR	TBA	100 L	TBA	39	100	MS6A_VMTCR_0601_-Megane_100p_FIX_V01	VMTCR_0601 7050 rpm 100%	See TCR-13***
SEAT LEON CUP RACER V1 DSG (2015)	1200 kg	100 L	60 mm	TCN2-C-001	100	5F6906259_0001	72 DC 3A 5C	NA
SEAT LEON TCR V2 SEQ (2016)	1200 kg	100 L	70 mm	002	100	5F6906259C (0001)	CVN	NA
SEAT LEON TCR V2 DSG (2016)	1200 kg	100 L	60 mm	004	100	5F6906259B (0001)	CVN	NA
SEAT LEON TCR V3 SEQ	1240 kg	100 L	70mm	16 & VO 17	100	5F6906259M	CVN	See TCR-09**
SEAT LCR TCR V3 DSG	1230 kg	100 L	70mm	15 & VO 17	102.5	5F6906259L	CVN	See TCR-09**
SUBARU STi TCR	TBA	100 L	TBA	7 & VO84	100	2018 mappa 95.m1pkg	CVN	See TCR-13***
VOLKSWAGEN GOLF GTI TCR SEQ (2016)	1210 kg	100 L	70 mm	003	100	5F6906259C (0001)	CVN	NA
VOLKSWAGEN GOLF GTI TCR SEQ	1250 kg	100 L	70mm	14 & VO19/40/41/46/82	100	5F6906259M	CVN	See TCR-09**
VOLKSWAGEN GOLF GTI TCR DSG	1230 kg	100 L	70mm	12 & VO19/40/41/46/48/80	102.5	5F6906259L	CVN	See TCR-09**

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

*For ALL cars: Boost pressure will be monitored and interpreted according to the TCR Technical Bulletin no. 14 / 2017. Values between reference points are linear interpolated.

**TCR-09: For Max Pboost and Rev limiter: see 2018 TCR TECHNICAL BULLETIN no.9 (Date: 2018, May, 17th)

***TCR-13: For Max Pboost and Rev limiter: see 2018 TCR TECHNICAL BULLETIN no.13 (Date: 2018, July, 20th)



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 GT4	5200cc/10cyl	1480 kg	110 L	2x42mm	Restrictor thickness 5mm. Acc. Audi R8 GT4 restrictor drawing ECU BOP 2018
BMW M3 GT4		1350 kg	110 L	NA	ECU BOP 2015
BMW M4 GT4	3000cc/6cyl Turbo	1460 kg	110 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 Evo 2015	3700cc/6cyl	1080 kg	100 L	NA	ECU BOP 2015
GINETTA G55 GT4 Evo 2017/2018	3700cc/6cyl	1100 kg	95 L	47,5mm	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: 1,75 bar (Max Engine power: 314kW (427Hp)) 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	Porsche Cup 991-I	3.800 cc	1220 kg	100L	Models 2013 .. 2016 NO Restrictor-Blende
Class 991	Porsche Cup 991-II	4.000 cc	1240 kg	100L	Models 2017 .. 2018 *Restrictor-Blende: 65 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**	
	Weight	Refuelling
991-Am	+/- 0kg	100 L
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*	BOP	Balance of Performance**	
		Weight	Refuelling
A6-PRO	BOP-Pro	+ 30 kg	-/- 5 L
A6-AM	BOP-Neutral	+/- 0 kg	+/- 0 L
	BOP-Advantage	-/- 50 kg	120 L

* 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	Minimum Weight	Max Refuel amount	Refuel advantage compensation time*	Restrictor**	Remarks
ACURA NSX GT3	1290	105 L	0	N/A	Max Boost(barA/rpm) 1,87/4000 1,87/4500 1,96/5000 2,02/5500 2,04/6000 2,06/6500 2,04/7000 2,02/>7500
ASTON MARTIN V12 VANTAGE GT3	1280 kg	110 L	0	2x41,5mm	FIA-restrictor design
AUDI R8 LMS Ultra	1245 kg	110 L	0	2x47,2mm	up to and incl. 2014
AUDI R8 LMS (GT3-038)	1260 kg	100L	0	2x39,0mm	Or 1280kg/2x40mm (only for A6-AM) FIA-restrictor design
BMW Z4 GT3	1230 kg	105 L	0	1x70,0mm	
CHEVROLET CORVETTE C6-ZR1	1220 kg	100 L	0	2x31,6mm	LMGTE-2-04
FERRARI 458 ITALIA GT3	1260 kg	110L	0	2x50,0mm	FIA-restrictor design
FERRARI 488 GT3	1300 kg	95L	6x15seconds	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)	1230 kg	100 L	0	2x56,0mm	Chas #2850# Chas #2842#
Ford GT3 (Lambda)	1220 kg	105 L	0	1x58mm	FIA-restrictor design
LAMBORGHINI HURACAN GT3	1260 kg	100 L	0	2x39,0mm	FIA-restrictor design
McLaren MP4-12C GT3	1255 kg	115 L	0	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	Tba	Tba	Tba	Tba	Max Boost Tba
MERCEDES SLS AMG GT3	1330 kg	105 L	0	2x38,0mm	FIA-restrictor design
MERCEDES AMG GT3	1330 kg	105 L	0	2x35,0mm	Or 1350kg/2x36mm (only for A6-AM) FIA-restrictor design
NISSAN GT-R GT3	1315 kg	115 L	0	2x40,0mm	Up to and incl. 2014 Max Pboost 2,05 barA (all rpm)
	1280 kg	110 L	0	2x40,0mm	EVO 2015 Max Pboost 2,0 barA (all rpm)
NISSAN GT-R Nismo GT3	Tba	Tba	Tba	Tba	2018 Max Boost: Tba
PORSCHE 997 GT3 R	1205 kg	100 L	Tba	1x72,0mm	MY2012 or older
	1205 kg	100 L	Tba	1x60,0mm	MY2013
PORSCHE 991 GT3 R	1245 kg	95 L	8x15seconds	2x41,5mm	FIA-restrictor design
RADICAL SPORTSCARS RXC TURBO GT3	Tba	Tba	Tba	Tba	Max Boost Tba
RENAULT SPORT RS01 Configuration BOP GT3	1220 kg	105L	0	2x42,0mm	Max Pboost 1,95 barA (all rpm) See also appendix Renault RS01 aerodynamics
SCG 003C	1280 kg	115 L	0	2x35,0mm	Max Pboost 1,85 barA (all rpm) (acc. Technical form SP-X 010 2018 & modified air-inlet)
SRT VIPER GT3-R	Tba	Tba	Tba	Tba	

*Refuel advantage compensation time: need to be served before the finish of the race in the penalty-box. If served under Code60, the time will be doubled.

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



Class SPX Special cars

Class SPX Cars 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 Huracán Super Trofeo Evo2017/2018	5200cc/10cyl	1275 kg	Acc. BOP-table below	2x41,0mm	1275kg/110L/2x42mm
Porsche GT America	4000cc/6cyl	1250 kg	Acc. BOP-table below	N/A	TBA
Porsche 911 GT3 Cup model (991-I) Modified	3800cc/6cyl	1200 kg	Acc. BOP-table below	N/A	TBA
Porsche 911 GT3 Cup model (991-II) Modified	4000cc/6cyl	1250 kg	Acc. BOP-table below	N/A	TBA
Porsche 991 Cup MR	4000cc/6cyl	1250 kg	Acc. BOP-table below	Restrictor: Free	TBA
Vortex 1.0	6200cc/8cyl	1100 kg	Acc. 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

For all other SPX cars:

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	2min09 COTA (range 2.09 – 2.10)	60 L	70 L	80 L
	2min10 COTA (range 2.10 – 2.11)	70 L	80 L	90 L
	2min11 COTA (range 2.11 – 2.12)	80 L	90 L	100 L
	2min12 COTA (range 2.12 – 2.13)	90 L	100 L	110 L
	2min13 COTA (range 2.13 – 2.14) *Initial Max refuelling amount	100 L	110 L	120 L
	2min14 COTA (range > 2.14) **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 Cars with partly fixed BOP

Brand & Type	Cylinder capacity	Minimum Weight	Max Refuelling amount	BOP / Remarks
Porsche 997	3600cc/6cyl	1150 kg	Acc. BOP-table below	N/A
Porsche 997	3800cc/6cyl	1200 kg	Acc. BOP-table below	Restrictor-Blende: 65mm
GC Automobile V8	6200cc/8cyl	1100 kg	Acc. BOP-table below	N/A
KTM X-bow (SP2-special)	2000cc/4cyl.	1000 kg	Acc. BOP-table below	Datalogger obligatory Pboost max is 2,3bar (independent of ambient air pressure) Max rpm 7000 at all gears Ride height is free

For all other SP2 cars:

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	2min15 COTA (range 2.15 – 2.16)	90 L	100 L	110 L
	2min16 COTA (range 2.16 – 2.17) *Initial Max refuelling amount	100 L	110 L	120 L
	2min17 COTA (range > 2.17) **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.



Class SP3 Special cars

Class SP3 Cars with partly fixed BOP

Brand & Type	Cylinder capacity	Minimum Weight	Max Refuelling amount	BOP / Remarks
KTM X-bow (SP3-special)	2000cc/4cyl.	1100 kg	Acc. BOP-table below	Datalogger obligatory Pboost max is 2,3bar (independent of ambient air pressure) Max rpm 7000 at all gears Ride height is free
BMW M3 V8 (4L)	4000cc/8cyl.	1300 kg	Acc. BOP-table below, minus 10 Litre (Equivalent of 1200kg min weight column)	Datalogger obligatory

For all other SP3 cars:

Class SP3-BOP-Table (for this class "Dynamic BOP" is applicable)

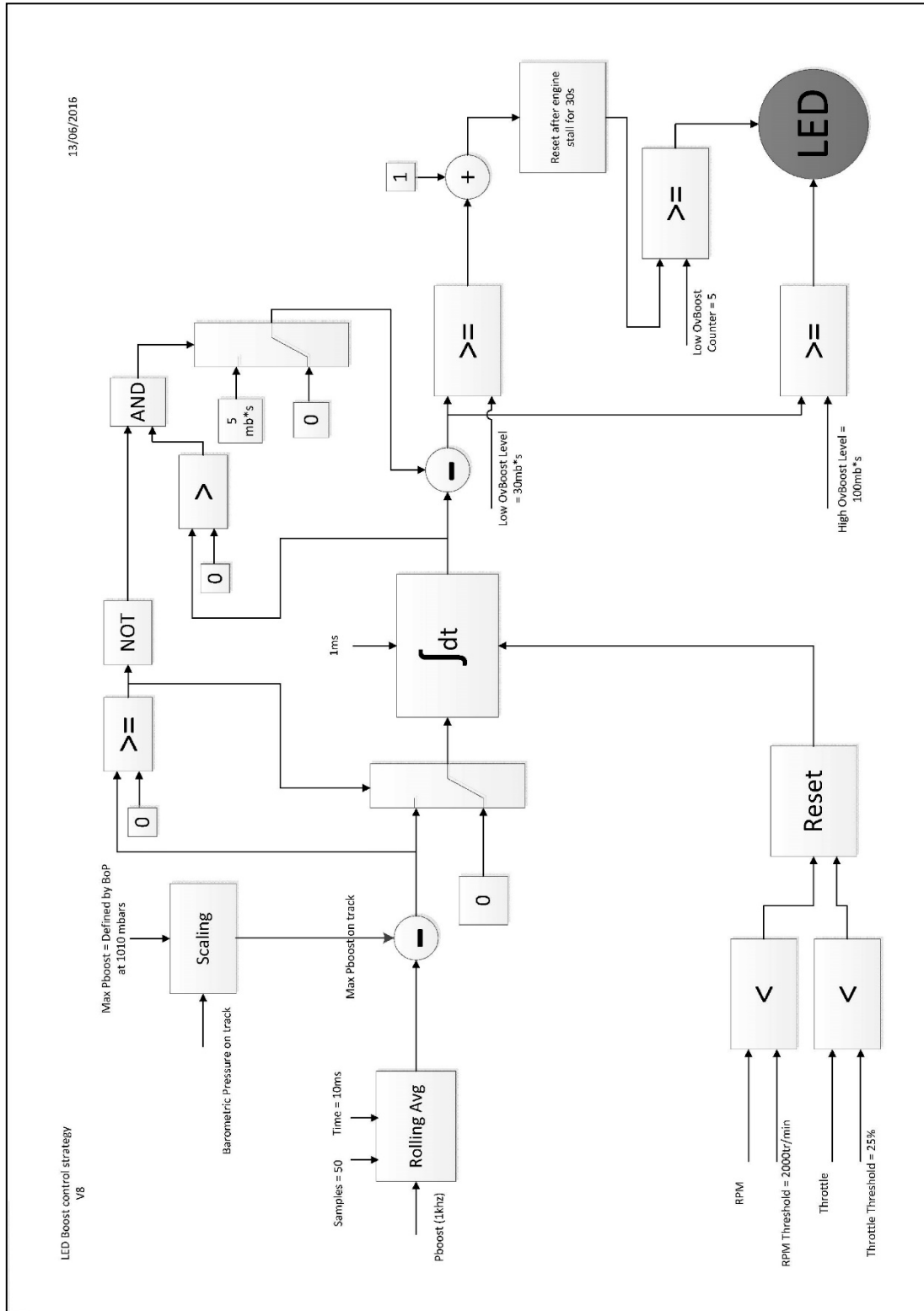
Class	SP-BOP-CAT Theoretical Best lap time Category	Max. refuelling amount				
		Minimum Weight 750 kg	Minimum Weight 1000kg	Minimum Weight 1100kg	Minimum Weight 1200kg	Minimum Weight 1300kg
SP3	2min19 COTA (range 2.19 – 2.20)	60 L	70 L	80 L	90 L	100 L
	2min20 COTA (range 2.20 – 2.21)	70 L	80 L	90 L	100 L	110 L
	2min21 COTA (range 2.21 – 2.22) *Initial Max refuelling amount	80 L	90 L	100 L	110 L	120 L
	2min22 COTA (range > 2.22) **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)	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 SP3 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.

Appendix: Control of Pboost strategy



Appendix: Renault RS01 aerodynamics



PHOTO N° 01

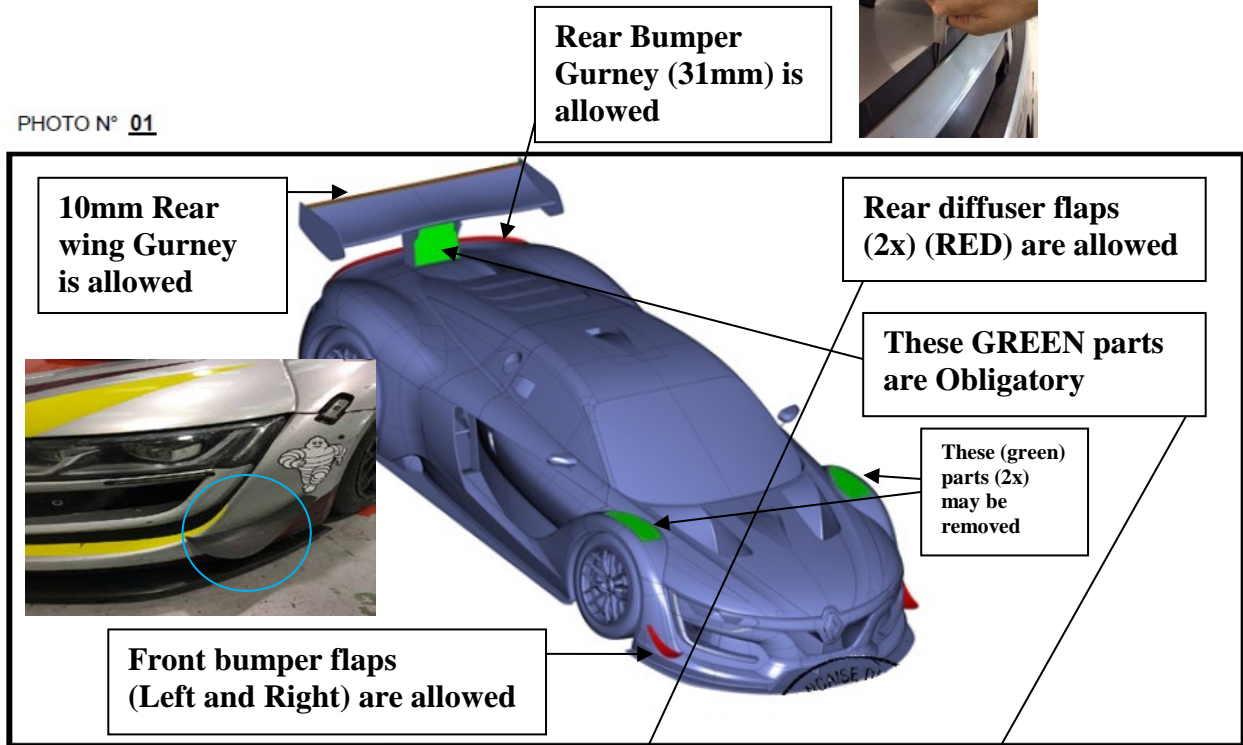


PHOTO N° 02

