

24H SERIES

POWERED BY  **HANKOOK**

Balance of Performance Publication

Date: 13.03.2023

HANKOOK 12H MUGELLO 2023

To Sporting & Technical Regulations
24H SERIES powered by Hankook 2023

(Sporting with permit nr. 0324.23.001 and Technical with permit nr. 0324.23.002)

Dear Teams and Drivers

These Balance of Performance and other figures are in force with immediate application and replaces eventually previously published BOP-publications.

Notes on boost control:

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

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For all Classes except class 992 and class GT3

SEMI-PRO-BOP

This "SEMI-PRO-BOP" refers to Series Bulletin 02/2021 Art. 8.3.2 Team Composition.

This "SEMI-PRO-BOP" is applicable for a team with drivers-line up with ONLY SEMI-PRO drivers.

BOP	Balance of Performance*	
	Weight	Refuelling
SEMI-PRO-BOP	+ 30 kg	-/- 5 L

* BOP adjusted (+/-) ballast weight and refuelling amount, referred to initial value specified in this BOP-publication)

Class TC: Touring Cars

Brand & Type	Cylinder capacity	Turbo	Minimum Weight	Max Refuelling amount	Remarks
BMW M240i Racing Cup	3000 cc	Twin Turbo	1440 kg	85L @ Green 85L @ Code60	According to BMW M240i Cup regulations 2020 Car height minimum 100mm
BMW E46 M3	3200 cc	No	1200 kg	120 L	
BMW M2 CS (365HP)	3000 cc	Twin Turbo	1530 kg	85 L @ Green 85L @ Code60	No power stick (365HP) Datalogger AIM Evo5 mandatory

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

Class TCX: Special Touring Cars

Brand & Type	Cylinder capacity	Turbo	Minimum Weight	Max Refuelling amount	Remarks
Ligier JS2 R	3700 cc	No	1075 kg	100 L	Datalogger AIM Evo5 mandatory
Lotus Elise Cup PB-R	1800 cc	Turbo	800 kg	100L @ Green 100L @ Code60	
Ginetta G55	3700 cc	No	1100 kg	110 L	
Porsche Cayman GT4 Club Sport (type 981)	3800 cc	No	1325 kg	110 L	Datalogger AIM Evo5 mandatory or alternatively AIM MXS 1.2 with SD card module)
Porsche 718 Cayman GT4 Club Sport (type 982)	3800 cc	No	1325 kg	110 L	Datalogger AIM Evo5 mandatory or alternatively AIM MXS 1.2 with SD card module)
BMW M240i Racing Cup	3000 cc	Twin Turbo	1440 kg	85L @ Green 85L @ Code60	Technical Regulations according Class TCX Car ride height is free
BMW M240i	3000 cc	Twin Turbo	1330 kg	120 L	
BMW M2 CS (450HP)	3000 cc	Twin Turbo	1530 kg	85 L @ Green 85L @ Code60	Black power stick (450HP)
SEAT LEON (DSG)	2000 cc	Turbo	1240 kg	100 L	Car ride height is free ECU Software version: 5F6906259L
Lamera GT	2500 cc	Turbo	1150 kg	110 L	Datalogger AIM Evo5 mandatory Max Pboost: 1,8 bar (400HP) Independent of Ambient pressure

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

Class TCR BOP and ECU-software version

Brand & Type	Minimum Weight	Max Refuel amount	Ride height	TCR Technical form	Power level (%)	SW Name ECU-software version	SW Identification (Checksum or ID)	Max Pboost* & Rev limiter	Correct (mbar/C)
ALFA ROMEO GIULIETTA RF TCR	1205 kg	100 L	70mm	22					
AUDI RS3 LMS SEQ	1205 kg	100 L	70mm	10					
AUDI RS3 LMS DSG	1195 kg	100 L	70mm	9					
AUDI RS3 LMS TCR	1210 kg	100 L	70mm	240					
CUPRA TCR SEQ	1210 kg	100 L	70mm	35					
CUPRA TCR DSG	1185 kg	100 L	70mm	43					
CUPRA Leon Competicion TCR	1210 kg	100 L	70mm	169					
HONDA CIVIC FK7 TCR SEQ	1220 kg	100L	70mm	33					
HONDA CIVIC FK2 TCR SEQ	1200 kg	100L	70mm	11					
HYUNDAI i30 N TCR	1230 kg	100 L	90mm	27					
HYUNDAI Veloster N TCR	1235 kg	100L	90mm	97					
KIA CEE'D TCR	1205 kg	100 L	70mm	24					
Lynk&Co 03 TCR	1235 kg	100 L	80mm	101					
MG 6 XPOWER TCR	1210 kg	100 L	70mm	139					
OPEL ASTRA TCR	1210 kg	100 L	70mm	5					
PEUGEOT 308 TCR	1190 kg	100 L	60mm	37					
RENAULT MEGANE RS TCR	1200 kg	100 L	60mm	121					
SUBARU STI TCR	1205 kg	100 L	70mm	7					
VOLKSWAGEN GOLF GTI TCR SEQ	1205 kg	100 L	60mm	14					
VOLKSWAGEN GOLF GTI TCR DSG	1180 kg	100 L	60mm	12					

**TCR ECU-software MUST be according
TCR Technical Bulletin no. 02-2023 dated: 22/02/2023**

*Boost pressure will be monitored according to: TCR Turbocharger Boost Monitoring Method, dated: 2021-03-29

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Class GT4: GT4 Grand Touring Cars

Brand & Type	Cylinder capacity	Minimum Weight	Max Refuelling amount	Restrictor	Remarks *
ALPINE A110 GT4	1800cc/4cyl. Turbo	1100 kg	95 L	NA	Max Pboost TBA
ASTON MARTIN VANTAGE AMR GT4	4000cc/8cyl Turbo	1450 kg	105 L	NA	Max Pboost bar Acc. 2021 MAP 4 (ref. point 1906mbar@4500rpm)
AUDI R8 LMS GT4	5200cc/10cyl	1470 kg	110 L	2x46mm	Restrictor thickness 5mm. Acc. Audi R8 GT4 restrictor drawing
BMW M4 GT4 (F82) (GT4-029)	3000cc/6cyl Turbo	1440 kg	110 L	NA	USB Powerstick "BLACK" (Max Engine power: 472Hp / 600Nm)
BMW M4 GT4 (G82) (GT4-044)	3000cc/6cyl Turbo	1490 kg	110 L	NA	Engine map: SP8 / LT-0
CHEVROLET CAMARO GT4	6200cc/8cyl.	1430 kg	100 L	64mm	FIA-restrictor design ECU BOP 2020
FORD MUSTANG GT4	5200cc/8cyl.	1500 kg	110 L	No restrictor	
GINETTA G55 GT4	3700cc/6cyl	1100 kg	95 L	68mm	Restrictor: G55-E0398 FIA-restrictor design
GINETTA G56 GT4	6200cc/8cyl.	1275kg	105 L	48mm	
KTM X-BOW GT4	2000cc/4cyl Turbo	1120 kg	70 L	NA	Max Pboost 2,0 bar Max rpm 7000 rpm (at all gears)
MCLAREN 570S GT4	3800cc/8cyl Turbo	1440 kg	110 L	NA	BOP-ECU MAP MY19GT4 Calibration (Software version: 13MA516RP)
MERCEDES AMG GT4	4000cc/8cyl Turbo	1470 kg	100 L	NA	Max Pboost 1,74 bar (Power Level 7 MAP BOP 2020 (Max Engine power: 315kW)
PORSCHE CAYMAN GT4 CLUPSPORT MR (Nat-GT4-024)	3800cc/6cyl	1272 kg	100 L	NA	ECU 2018 BOP
PORSCHE 718 CAYMAN GT4 CS MR (Nat-GT4-037)	3800cc/6cyl	1300 kg	115 L	NA	ECU 2021 BOP
PORSCHE 718 CAYMAN GT4 RS CS (Nat-GT4-042)	4000cc/6cyl	1360 kg	100 L	53,7mm	
TOYOTA GR SUPRA GT4	3000cc/6cyl Turbo	1360 kg	100 L	NA	Power Stick Blue

* Specified Max Pboost pressure are absolute pressure at ambient of 1010mbar.

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Porsche 991 Cup (Generation I and II): **See Class GTX**

Class 992: Porsche 992 Cup classes Including BOP- table class 992-PRO & 992-AM

Class*	BOP*	Minimum Weight	Max Refuelling amount	Fuel flow**	Remarks
992-PRO teams in Class 992	BOP-PRO	1280 kg	110 L	80%	Models 2021 .. 2022 NO Restrictor-Blende
992-AM	BOP-AM	1280 kg	110 L	100%	Models 2021 .. 2022 NO Restrictor-Blende
	BOP-AM Advantage (for team with full AM driver line-up)	1280 kg	110 L @ Green 110 L @ Code60	100%	Models 2021 .. 2022 NO Restrictor-Blende

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

** Fuel flow is % of max fuel flow. The fuel flow restriction is fully integrated in the fuel pumps and works fully automatic.

Creventic can apply reduced refuelling rates, because Creventic has its own professional and dedicated central fuel station.

Class GT3-BOP-TABLE

Class*	BOP	Balance of Performance**	
		Weight	Refuelling
GT3-PRO teams in Class GT3	BOP-Pro	+ 30 kg	-/- 5 L
GT3-PRO/AM	BOP-PRO/AM	+/- 0 kg	+/- 0 L
GT3-AM	BOP-AM	+/- 0 kg	+ 15 L More Engine Power, (bigger restrictor or more turbo boost) see GT3-BOP-table
	BOP-AM Advantage (for team with full AM driver line-up)	+/- 0 kg	Same as AM-BOP plus: 100% max refuelling @ CODE-60***

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

** BOP adjusted (+/-) ballast weight and refuelling amount, referred to initial value specified in Class GT3-BOP Table on next page

*** E.g. if initial max refuelling is 100 Litre: You are allowed to refuel 115 L @ green and you are allowed to refuel 115 Litre during CODE-60.

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Class GT3 including GT3-PRO/AM and GT3-AM (Mainly GT cars)

Brand & Type	Minimum Weight	Max Refuel amount	Fuel flow**	Restrictor	Max Pboost *
ASTON MARTIN VANTAGE AMR GT3	1290 kg	110 L	100%	N/A	Max Pboost ratio/rpm 1,62/4000 1,67/4500 1,75/5000 1,81/5500 1,84/6000 1,83/6500 1,72/7000 1,63/7200 1,40 > 7300 AM-BOP 1,77/4000 1,78/4500 1,85/5000 1,92/5500 1,95/6000 1,95/6500 1,83/7000 1,77/7200 1,40 > 7300
AUDI R8 LMS GT3 (GT3-038) EVO I	1280kg	100 L	95%	2x40,0mm AM-BOP: 2x43mm	
AUDI R8 LMS GT3 (GT3-038) EVO II (2022)	1290kg	100 L	95%	2x36,0mm AM-BOP:2x39mm	FIA restrictor design acc. 2022 homologation regulations Group GT3
BENTLEY CONTINENTAL GT3	1290 kg	105 L	100%	N/A	Max Pboost ratio/rpm 1,86/4000 1,76/4500 1,67/5000 1,60/5500 1,55/6000 1,45/6500 1,35/7000 1,25 > 7250 AM-BOP 1,953/4000 1,853/4500 1,765/5000 1,696/5500 1,638/6000 1,543/6500 1,431/7000 1,343 > 7250
BMW M4 GT3	1290 kg	100 L	95%	N/A	Max Pboost ratio/rpm 2,36/4000 2,44/4500 2,55/5000 2,62/5250 2,70/5500 2,76/5750 2,81/6000 2,83/6250 2,76/6500 2,66/6750 7000/2,54 AM-BOP: 2,40/4000 2,48/4500 2,59/5000 2,66/5250 2,74/5500 2,80/5750 2,85/6000 2,87/6250 2,80/6500 2,70/6750 7000/2,58
BMW M6 GT3	1310 kg	105 L	100%	N/A	Max Pboost ratio/rpm 1,78/4000 1,86/4500 1,94/5000 1,98/5500 1,92/6000 1,78/6500 1,62/7000 1,30/7250 AM-BOP: 1,83/4000 1,91/4500 1,99/5000 2,03/5500 1,97/6000 1,83/6500 1,67/7000 1,35/7250

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FERRARI 488 GT3	1280 kg	100 L	95%	N/A	Max Pboost ratio/rpm 1,47/4000 1,51/4500 1,55/5000 1,59/5500 1,61/6000 1,57//6500 1,54/7000 1,49/7250 1,47/7500 1,35/>7600 AM-BOP: 1,54/4000 1,59/4500 1,63/5000 1,67/5500 1,69/6000 1,65//6500 1,62/7000 1,56/7250 1,54/7500 1,35/>7600
FERRARI 458 ITALIA GT3 (EVO 2015)	1300 kg	110 L	100%	2x55,5mm AM-BOP Tba	
LAMBORGHINI HURACAN GT3 (GT3-040 and GT3-054)	1310 kg	105 L	100%	2x39,0mm AM-BOP: 2x42,5mm	For AM-BOP alternatively: 2x40mm @ 1280kg
McLaren 720S GT3	1230kg	105 L	100%	N/A	Max Pboost ratio/rpm 1,78/4000 1,75/4500 1,72/5000 1,70/5500 1,62/6000 1,56//6500 1,45/7000 1,40/7500 1,34/8000 1,12/8100 AM-BOP: 1,87/4000 1,84/4500 1,81/5000 1,79/5500 1,70/6000 1,64//6500 1,52/7000 1,47/7500 1,41/8000 1,18/8100
MERCEDES AMG GT3	1320kg	105 L	100%	2x35,0mm AM-BOP: 2x38mm	
PORSCHE 911 GT3 R (991 I & 991 II)	1260 kg	95 L	92,5%	2x41,5mm AM-BOP: 2x45mm	

All restrictors must be acc. FIA-restrictor design 2021 homologation regulations Group GT3 GT RESTRICTOR GEOMETRY (unless explicit described otherwise)

* Values are boost pressure ratio and need to be multiplied by the ambient pressure to get the Pboost limit.

Competitors must adjust boost pressure relative to ambient pressure at each event. Pboost limits linear interpolation approach.

** Fuel flow is % of max fuel flow. The fuel flow restriction is fully integrated in the fuel pumps and works fully automatic.

Creventic can apply reduced refuelling rates, because Creventic has its own professional and dedicated central fuel station.

This way, the difference in fuel consumption over the entire course of the race is compensated.

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Class GTX Special GT cars

Brand & Type	Cylinder capacity	Minimum Weight	Max Refuelling amount	Fuel flow**	BOP	Remarks
Lamborghini Huracán Super Trofeo	5200 cc	1300 kg	110 L	100%	2 x 41mm	Datalogger AIM Evo5 mandatory
Lotus Exige V6 Cup R	3500 cc Turbo	1000 kg	120 L @ Green 120L @ Code60	100%	Pboost: TBA	Datalogger AIM Evo5 mandatory
MARC II V8	5200 cc	1150 kg	120 L	100%	NA	NA
Vortex 1.0	6200 cc	950 kg	120 L @ Green 120L @ Code60	100%	NA	NA
KTM X-BOW GTX	2500 cc Turbo	1100 kg	115 L	100%	2,4 bar (independent of Pamb), max rpm 7000	Datalogger AIM Evo5 mandatory
Audi TTRS	2500cc Turbo	1200 kg	100 L @ Green 100L @ Code60	100%	NA	NA
Audi R8 LMS GT2	5200 cc	1350 kg	110 L	100%	2 x 60mm	Datalogger AIM Evo5 mandatory
Porsche 911 GT3 Cup 991 Gen I or Gen II	3800cc 4000cc	1200 kg	100 L @ Green 100L @ Code60	100%	NA	NA
Porsche 911 GT3 Cup 991 MR	4000 cc	1200 kg	120 L @ Green 120 L @ Code60	100%	NA	NA
Sports Car NOVA NP02	5000 cc	750 kg	TBA	TBA	TBA	Datalogger AIM Evo5 mandatory

Please note: Art. 3.3 of Appendix 7 of the Sporting & Technical regulations

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

** Fuel flow is % of max fuel flow. The fuel flow restriction is fully integrated in the fuel pumps and works fully automatic. When cars with an assigned fuel flow restriction refuel, the fuel pump will automatically stop for a set amount of time each ten seconds. This way, the difference in fuel consumption over the entire course of the race is compensated.

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Appendix: Control of Pboost strategy

