NEWS del 28 agosto 2018 - Decisione n° 13/2018

Il Balance of Performance adottato per la manifestazione di Vallelunga del 16/9, come previsto dall'articolo 7.1 del Regolamento Sportivo del TCR Italy Touring Car Championship, è quello definito dalla WSC TCR International Series (vedi bollettino TCR n° 13 allegato) ad eccezione del Compensation Weight, riportato di seguito, che sostituisce integralmente quello riportato nel bollettino WSC.

TCR Car Models	Target Racing Weight [kg]	BoP Compensation Weight[1] [kg]	BoP Ballast [kg]	Tot Min. Racing Weight TCR Italy [kg]	Tot Min. Racing Weight [kg]
Alfa Romeo Giulietta TCR	1265	40	-40	1265	~~1285~~
Audi RS 3 LMS SEQ	1265	60	-10	1315	~~1315~~
Audi RS 3 LMS DSG	1230	0	-10	1220	~~1280~~
Cupra TCR SEQ	1265	40	-20	1285	~~1305~~
Cupra TCR DSG	1230	10	-20	1220	~~1270~~
Honda Civic FK7 TCR (2018)	1265	20	0	1285	~~1325~~
Honda Civic FK2 TCR (2017)	1265	20	0	1285	~~1325~~
Hyundai I30 N TCR	1265	40	0	1305	~~1325~~
KIA Cee'd TCR	1265	60	-20	1305	~~1305~~
Lada Vesta TCR	1265	60	10	1335	~~1335~~
Opel Astra TCR	1265	0	0	1265	~~1325~~
Peugeot 308 TCR	1265	60	-20	1305	~~1305~~
Peugeot 308 Racing Cup	1225	0	-60	1165	~~1225~~
Renault Mégane TCR	1265	60	-30	1295	~~1295~~
SEAT TCR SEQ	1265	40	-20	1285	~~1305~~
SEAT TCR DSG	1230	10	-20	1220	~~1270~~
Subaru STi TCR	1265	0	-20	1245	~~1305~~
VW Golf GTI TCR SEQ	1265	0	-10	1255	~~1315~~
VW Golf GTI TCR DSG	1230	60	-10	1280	~~1280~~

(1) 2018 TCR Italy BOP Compensation Weight Automatic Formula

Si ricorda, a tutti i partecipanti, che le vetture, in qualunque momento dell'evento, dovranno rispettare tutti i requisiti di sicurezza previsti dall'All. J e dovranno essere conformi integralmente al 2018 TCR Technical Regulations.

In particolare si rammenta che, in ottemperanza agli art. 3.3 e 3.6 del TCR Technical Regulations vigente (vedi stralcio riportato di seguito), è obbligo di ogni Concorrente assicurare ai Commissari Tecnici il pieno utilizzo del sistema Data Logging; sistema che dovrà fornire tra l'altro, in maniera chiara ed identificabile, il valore delle pressioni di sovralimentazione.

2018 TCR Technical Regulations

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Art. 3.3 Compliance with the regulations
AII vehicles musi be conformed lo these regulations, TCR Technical Form, TCR Technical Passport and lo all WSC Notification and Technical Bulletins.

AII parts noi mentioned in these regulations have lo remain those from the basic production car or another production model of the same manufacturer and correspond lo the Manufacturer's Parts Catalogue for the produced model and may noi be modified in any way.

In case of doubt about the conformity of any part the Technical Delegate may ask the opinion of the car's manufacturer or request the replacement with a reference part without any further explanation. All cosi of such operations will be covered by the Competitor.

Teams will deliver on request lo the TCR technical staff following information regarding TCR cars:

- **Data from team's data logger**
- **Video footage from team's camera**
- **Any other technical documentation**

Upon request, manufacturers will deliver lo the TCR technical staff any technical information regarding TCR cars.

WSC has the right lo archive all information regarding TCR cars.

It is the duly of each competitor to assure the Scrutineers and the Stewards of the competition that his car complies with these regulations in their entirety at all times during a competition.

All costs of the technical checks will be supported by competitors.

A car, the construction of which is deemed to be dangerous, may be excluded by the Stewards.

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Art. 3.6 Data logging
The car must be fitted with the scrutineering data logging system (memotec) providing following data (Certification):

- **Speed of the 4 wheels**
- **Engine revs & timing**
- **Longitudinal acceleration**
- **Laleral acceleration**
- **Throttle pedal position**
- **Throttle valve position and of any other contrai element**
- **Engine load target & delivered Engine load (if the Throttle Valve doesn't follow the Throttle Pedal Position)**
- **Engine Water Temperature**
- **Inlet air temperature in the manifold**
- **Boost pressure (monitored by an additional sensor)**
- **Front & Rear Brake Calliper pressure**
- **Lap trigger**
- **Lambda-signal**
- **Ignition angle timing**
- **Injection duration, start & end**
- **injection fuel pressure**
- **camshafts timing & positions**
- **GPS**
- **Steering wheel angle**
- **Lau nch-contral button**

WSC will decide and communicate the list of stand-alone sensors or of other independent monitoring systems for each model. (Certification)
The Scrutineering Data Logger system consisting of an "memotec" evo4 or evo5 box and a TCR kit (specific bracket, sensors and loom) must be installed corresponding to the instructions.
Contaci to: memotec GmbH: Bauwaldstrasse 1, 75031 Eppingen, Germany Phone: +49.7260.920440; Fax: +49.7260.920444 Mail: info@me-mo-tec.de; Web: www.me-mo-tec.de

Manufacturers will offer for sale race cars equipped with scrutineering data logging system.
The collected data remain at WSC disposal.
The scrutineering data logger may not be used as Team Data Logger and may not be accessed by the team. On request, competitors receive recorded data of their own scrutineering data logger, to verify own sensor values.
The use ofTeam Data Logger is allowed. The Team will allow access to the TCR Technical Delegate to the data ofTeam Data Logger at any time.
Team Data Logger with removable memory devices are allowed.
The use of following sensors is not allowed:

- **Pitot tube**

- **Tire pressure**
- **Tire internal and external temperature including the running surface Ride height**
- **Inertial platform**
- **Turbine speed**
- **Combustion pressure**
- **Sensors using wireless data transmission**
- **Engine torque sensors**
- **Load celi on power train, running gear and suspension mounting points.**

….. omissis ……

TCR Turbocharger Boost Pressure Monitoring Method

Date: 2018, August, 14th

This Method amends and replaces the procedure published in the TCR Technical Bulletin no. 14 / 2017.

1. Conditions

Each of the following conditions has to be met to discard meaningless results

- Engine speed is within the rpm range that is defined for the <u>pBoost</u> check by the relevant Bulletin.

- Throttle pedal position is at least at 90% of its total travel.

- No gearshift window is active.
  A gearshift window is defined as a time span of maximum 300ms starting by the 1st detected overboost within 1000ms after gear upshift.

- Lap time of the car is ≤ 107% of the fastest lap time of the monitored session or of the fastest simultaneously driven lap time (in sessions with changing weather conditions).

If one of these conditions is not met the monitoring method is not considering the actual boost pressure value. All previous values are kept for continuing the monitoring after the conditions are met again.

If each of these conditions are met the corresponding boost sensor value at each sampling time is considered to be a valid data point.

For the upshift detection two methods are in place:

a. Consider a rpm drop of more than 200rpm within 20ms. This drop indicates a gear upshift. The actual point in time for the upshift is considered the one at which the rpm curve has its inflection towards positive incline.

b. Reliable information (e.g. CAN signal, gear potentiometer, etc.) on the Scrutineering Data Logger on the time of operated gear upshift will be preferred.

2. Boost Pressure Monitoring Method

2.1. Description

The boost pressure is measured with the official TCR Sensor using 1mbar resolution and a sampling rate of 100Hz.
The monitoring method itself is composed of steps that are described below and executed with the same sampling frequency as the boost pressure sensor is captured. It is not applied before 50 boost pressure samples has been measured that met the conditions given above and not for the last 25 boost pressure samples of each measuring period:

<u>Smoothing the boost sensor raw value</u>

The smoothing of the boost sensor raw value is performed by applying a rolling average algorithm to the boost sensor values. The rolling average algorithm is performed on 50 equally weighted samples. Initially the 50 samples are set to zero (0mbar). The samples are collected in so-called circular buffer where the oldest sample is replaced by the latest sample at each sampling point.

<u>Evaluating the Overboost (OB) Condition</u>

The OB is detected by subtracting the maximum permitted boost pressure from the result of the rolling average calculation. Only results greater 0mbar will be considered for the next steps. The maximum permitted boost pressure is dependent on rpm and has to be derived from the relevant TCR Technical Bulletin. The relevant rpm value for each evaluation is the one that was captured 25 samples before the current sample point.

$$OB(i) = pBoost_{avg}(i) - pBoost_{lim}(rpm_{i-25})$$

For the first valid data point after an upshift OB(i) is set to zero.

<u>High (HOB) and Low Overboost (LOB) Detection</u>

Thresholds are used to classify OB(i) into two cases:
- HOB Threshold (HOT): 100mbar
- LOB Threshold (LOT): 30mbar

<u>Accepted Limit Violations</u>

Tolerances for LOB and HOB data points are applied:
- 1,5% of the total valid data points may be higher as LOB limits but still lower as HOB limits: LOB ≤ OB(i) < HOB
- 0,5% of the total valid data points may be higher as HOB: OB(i) ≥ HOB
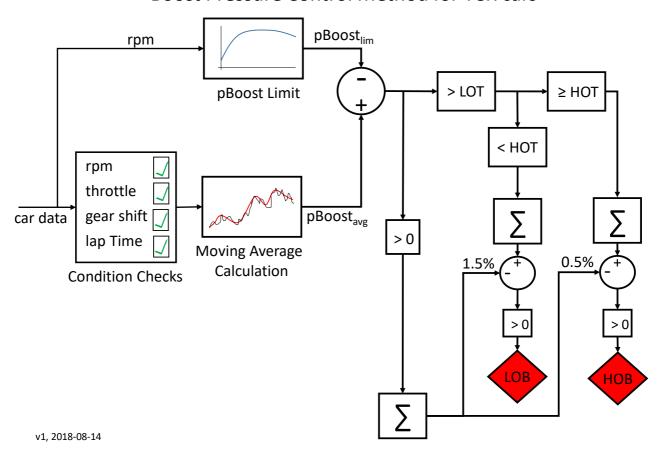
These tolerances are subject to modification though TCR Technical Bulletin (also brand specific).

2.2. Block Diagram

The next diagram shows the entire boost pressure monitoring method including all conditions for verification.

Boost Pressure Control Method for TCR cars

v1, 2018-08-14

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Andreas Bellu / TCR Technical Director

Date: 2018, August, 15th

This decision is with immediate application and valid until further notice.

Modifications in **bold writing**

TCR BoP & Eligible Cars:

TCR Car Models	Engine Power Level [%]	Target Racing Weight [kg]	BoP Compensation Weight* [kg]	BoP Ballast [kg]	Tot. Min. Racing Weight [kg]	Ride Height [mm]
Alfa Romeo Giulietta TCR	102.5	1265	60	-40	1285	70
Audi RS 3 LMS SEQ	100	1265	60	-10	1315	70
Audi RS 3 LMS DSG	102,5	1230	60	-10	1280	60
Cupra TCR	100	1265	60	-20	1305	70
Cupra TCR DSG	102.5	1230	60	-20	1270	60
Honda Civic FK7 TCR	97.5	1265	60	0	1325	80
Honda Civic FK TCR	100	1265	60	0	1325	**70**
Hyundai I30 N TCR	97.5	1265	60	0	1325	90
KIA Cee'd TCR	100	1265	60	-20	1305	70
Lada Vesta TCR	100	1265	60	**10**	13**35**	80
Opel Astra TCR	100	1265	60	**0**	13**25**	70
Peugeot 308 TCR	102.5	1265	60	**-20**	13**05**	70
Peugeot 308 Racing Cup	100	1225	60	-60	1225	70
Renault Mégane TCR	100	1265	60	-30	1295	70
SEAT TCR SEQ	100	1265	60	-20	1305	70
SEAT TCR DSG	102.5	1230	60	-20	1270	60
Subaru STi TCR	100	1265	60	-20	1305	70
VW Golf GTI TCR SEQ	100	1265	60	-10	1315	70
VW Golf GTI TCR DSG	102.5	1230	60	-10	1280	60

* The "BoP Compensation Weight" of 60kg applies at the 1st event of a model in a TCR Series and will be corrected during the season using the particular Compensation Weight Automatic Formula.

Andreas Bellu / TCR Technical Director

Annexe: Imposed parameters for Certified Software

Imposed parameters for Certified Software

Model	Power level [%]	SW Name	SW Identification (Checksum or ID)		Check Method	Rev limiter	Max Boost Pressure [mbar] / engine revs					
Alfa Romeo Giulietta TCR	102.5	1.600_TCR2018_BOP_102.5%	1821/1314		CAN hi/lo	7100	Revs	4600	5100	5600	6100	6600	7100
							Boost	2430	2600	2730	2720	2710	2700
Audi RS 3 LMS SEQ	100	5F6906259M	CVN		OBD	6800	Revs	4300	4800	5300	5800	6300	6800
							Boost	2350	2350	2580	2620	2550	2470
Audi RS 3 LMS DSG	102.5	5F6906259L	CVN		OBD	6800	Revs	4300	4800	5300	5800	6300	6800
							Boost	2450	2450	2630	2670	2600	2520
CUPRA SEQ	100	5F6906259M	CVN		OBD	6800	Revs	4300	4800	5300	5800	6300	6800
							Boost	2350	2350	2580	2620	2550	2470
CUPRA DSG	102.5	5F6906259L	CVN		OBD	6800	Revs	4300	4800	5300	5800	6300	6800
							Boost	2450	2450	2630	2670	2600	2520
Honda Civic FK7 TCR 2018	97.5	TCR_H70_REV_1.02.33	97.5		ECAL	7000	Revs	4500	5000	5500	6000	6500	7000
							Boost	2280	2480	2570	2620	2600	2420
Honda Civic FK TCR 2017	100	TCR-V2.6.98+7.5	100		ECAL	7200	Revs	4700	5200	5700	6200	6700	7200
							Boost	2050	2210	2350	2500	2460	2310
Hyundai i30N TCR	97.5	V1.606.X1_i30_TCR_BOPv2-_975_Prod-003.LRC	24960/60966		CAN hi/lo	7000	Revs	4500	5000	5500	6000	6500	7000
							Boost	2320	2300	2280	2295	2210	1950
KIA Cee'd TCR	100	1502_Kia_TCR_18_-100%v05	Firmware ID		Motec tool	6900	Revs	4400	4900	5400	5900	6400	6900
							Boost	2825	2480	2540	2580	2590	2610
Lada Vesta TCR	100	12.10.1.3	BF5C3864h		Marelli	6700	Revs	4200	4700	5200	5700	6200	6700
				BF5C3800h		CAN hi/EVO5		Boost	2260	2270	2370	2500	2420	2200
Opel Astra TCR	100	12.7.3.30_Bop2_100- prozent	4B22B3F6A366C34Ah		CAN hi	7000	Revs	4500	5000	5500	6000	6500	7000
							Boost	2280	2450	2610	2620	2520	2280
Peugeot 308 TCR	102.5	Soft 12.10.3.0	8D5EDC65h		MapSel 1 on CAN	7100	Revs	4600	5100	5600	6100	6600	7100
							Boost	2670	2700	2750	2830	2890	2810
Peugeot 308 Racing cup	100	Soft 12.10.3.0	5C23844Dh		MapSel 2 on CAN	7100	Revs	4600	5100	5600	6100	6600	7100
							Boost	2640	2650	2670	2760	2780	2670
Renault Mégane TCR	100	MS6A_VMTCR_0601_-Megane_100p_FIX_V01	VMTCR_0601 7050 rpm 100%		A2L	7000	Revs	4500	5000	5500	6000	6500	7000
							Boost	2260	2230	2290	2100	2250	2270
SEAT TCR SEQ	100	5F6906259M	CVN		OBD	6800	Revs	4300	4800	5300	5800	6300	6800
							Boost	2350	2350	2580	2620	2550	2470
SEAT TCR DSG	102.5	5F6906259L	CVN		OBD	6800	Revs	4300	4800	5300	5800	6300	6800
							Boost	2450	2450	2630	2670	2600	2520
Subaru STi TCR	100	2018 mappa 95.m1pkg	CVN		Motec tool	7200	Revs	4700	5200	5700	6200	6700	7200
							Boost	2520	2610	2680	2580	2460	2240
VW Golf GTI TCR SEQ	100	5F6906259M	CVN		OBD	6800	Revs	4300	4800	5300	5800	6300	6800
							Boost	2350	2350	2580	2620	2550	2470
VW Golf GTI TCR DSG	102.5	5F6906259L	CVN		OBD	6800	Revs	4300	4800	5300	5800	6300	6800
							Boost	2450	2450	2630	2670	2600	2520

Boost pressure will be monitored and interpreted according to the TCR Technical Bulletin **no. 12 / 2018**. Values between reference points are piece wise cubic interpolated.
It is not allowed in any circumstances to exceed the highest boost pressure values.
Accepted limit violation:
- 1,5% of the total valid data points with the highest values in regard to the low over boost limits (30mbar < p Boost < 100mbar relative to the corresponding Max Boost Pressure)
- 0,5% of the total valid data points with the highest values in regard to the high over boost limits (p Boost ≥ 100mbar relative to to the corresponding Max Boost Pressure)