



TECHNICAL REGULATIONS

Revision Date: 11/07/2018

Event:

Michelin IMSA Sportscar Encore at Sebring

P3

LMP3

GT3

GT3

GT4

GT4

TCR

TCR

Classes:



Sanctioned by:

**INTERNATIONAL
MOTOR SPORTS
ASSOCIATION**

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Foreword:

For all Members, the IMSA RULES of the International Motor Sports Association establish the foundation for the organization and conduct of the Event. The IMSA RULES take effect immediately upon publication.

The purpose of the RULES is to: (i) promote safety, the sport of automobile Competition and IMSA, (ii) enhance Competition, (iii) ensure the quality, fairness and integrity of the IMSA programs and operations and (iv) achieve prompt finality in the Competition results (“Purpose”).

ALL MEMBERS ARE REQUIRED TO REVIEW THESE IMSA RULES CAREFULLY.

The IMSA RULES consist of following three (3) sections and the Event Supplementary Regulations (SR):

- The Technical Regulations, which outline the rules and regulations for the specific cars and equipment. The Technical Regulations may be modified or changed at any time by the publication of a Technical Bulletin, amending the Technical Regulations.
- The IMSA Sporting Regulations (ISR), which concern Competitor and Event procedures, as well as guidelines for the safe and uniform operation of the sport. The ISR may be modified or changed at any time by the publication of a Competition Bulletin, amending the ISR.
- The Series Supplementary Regulations (SSR) that provides Series-specific information about each Class. The SSR is integrated into the ISR and are designated with “(SSR)” next to the Paragraph title. The SSR may be modified or changed at any time by the publication of a Competition Bulletin, amending the SSR.

Any portion of the RULES may be modified through Bulletins (Competition Bulletins and Technical Bulletins, respectively) and takes force when published. Once published, the Bulletin shall take precedence over the applicable portion of the RULES. Additionally, the RULES may be modified for the Event by the Race Director through the mandatory briefing instructions.

HOW TO READ THE RULES

These Technical Regulations are a Permissive document. Unless specifically defined as permitted, any modification, change, or adjustment is inherently prohibited. This philosophy is more clearly defined in Article 3 and specific modifications are clearly defined in Article 6.

The Technical Regulations are specific to particular categories, classes and types of race cars in a Series. Where the Technical Regulations conflict with the ISR or the SSR, the Technical Regulations shall govern.

The SR is specific to the Event and published in conjunction with the Event schedule. Where SR conflicts with the ISR, SSR, and/or Technical Regulations, the SR shall govern.

These Technical Regulations apply to all classes competing at the Event. Where a regulation applies to a specific class (or classes), the applicable class designation is included in the regulation. Where no specific class designation is given, the regulation applies to all classes.

ARTICLE 1. TECHNICAL PHILOSOPHY

1.1. Technical Eligibility

- 1.1.1. Cars representing a Car Model must always respect the Specification.
- 1.1.2. To be eligible for participation a Car Model must:
 - a. Hold a valid Homologation conforming to the Homologation Regulations and Homologation Documentation specific to the Class, approved and issued by an IMSA-recognized Homologation Authority.
- 1.1.3. IMSA is the sole authority to define the Technical Eligibility of a Car Model for the Event.

ARTICLE 2. USING THESE TECHNICAL REGULATIONS

2.1. Structure

- 2.1.1. These Technical Regulations are structured to assist Manufacturers and Entrants in accurate interpretation of the technical expectations and enforcement of the IMSA Technical Philosophy.

2.2. Conflict Resolution

- 2.2.1. These IMSA Technical Regulations shall govern in any case where a conflict exists with the Homologation Regulations and Documentation.

2.3. Final Authority

- 2.3.1. IMSA is the Final Authority with respect to these Technical Regulations.

ARTICLE 3. CONDITIONS FOR USE OF A SPECIFIC HOMOLOGATION

3.1. Configuration of the Car

- 3.1.1. At all times during the Event it is the Entrant's responsibility to ensure the configuration of the Car Model represents the Homologated components of the Specification; including:
 - a. As-Homologated Configuration
 - b. As-Delivered Configuration
 - c. Parts Manual
 - d. Homologation Extension Form Configuration
- 3.1.2. The original, As-Homologated Configuration of the Car Model must not be modified unless permitted by these Technical Regulations.
- 3.1.3. The As-Delivered Configuration of a Car must respect the as-received configuration from the Car Model Manufacturer, unless permitted by these Technical Regulations.
- 3.1.4. The Parts Manual is the official parts catalogue for the Car Model as defined by the Car Model Manufacturer or Constructor:
 - a. Specific parts listed in the Parts Manual must be used on all representations of a Car Model unless permitted by these Technical Regulations.
- 3.1.5. To be eligible for use in the Event, modifications detailed in Homologation Extension Forms must:
 - a. Comply with these Technical Regulations.
 - b. Be approved by, or have initiated the process to obtain approval from, the Homologation Authority, and appended to the Car Model Homologation.
 - c. Be approved by IMSA.
 - d. Be available to all Entrants of the relevant Homologated Car for the next Event.

ARTICLE 4. BALANCE OF PERFORMANCE – GT3/GT4/TCR

4.1. Balance of Performance

- 4.1.1. IMSA may, at its discretion, utilize an adjustment method to maintain competitive equivalency between Cars within an applicable Class, and between Classes.
- 4.1.2. All decisions by IMSA regarding Balance of Performance are Conclusive and not subject to protest or appeal.
- 4.1.3. Providing false or intentionally misleading information is a breach of these Technical Regulations.

4.2. Criteria for Adjustments

- 4.2.1. Performance is evaluated using observed performance data; including, but not limited to, the IMSA Scrutineering data logger and official Timing and Scoring.
 - a. IMSA may omit from consideration any data not indicative of the established performance of the Car Model.

4.3. Adjustment Parameters

- 4.3.1. The following adjustments may apply:
 - a. Minimum mass
 - b. Engine restrictor and/or boost ratio change
 - c. Maximum fuel cell capacity
 - d. Assigned refueling restrictor diameter
 - e. Aerodynamic elements and/or settings
 - f. Other parameters as designated by IMSA

ARTICLE 5. SAFETY

5.1. Driver Safety Harness System

- 5.1.1. Cars must be equipped with a minimum 6-point Driver safety harness with a valid label demonstrating compliance with one of the following standards:
 - a. FIA Standard 8853/98: FIA Safety Harnesses Standard
 - i. [FIA Technical List #24](#): Harnesses Homologated by the FIA according to the FIA Standards 8853/98 and 8854/98
 - b. FIA Standard 8853-2016: Safety Harnesses
 - i. [FIA Technical List #57](#): Harnesses Homologated according to the FIA Standard 8853-2016
 - c. SFI Specification 16.5: Stock Car Driver Restraint Assemblies
 - i. [Specification](#)
 - ii. [Manufacturers](#)
 - d. SFI Specification 16.6: Advanced Motorsport Driver Restraint Assemblies
 - i. [Specification](#)
 - ii. [Manufacturers](#)
- 5.1.2. Installation must be performed in accordance with instructions provided by the system supplier and/or manufacturer.
 - a. Belt components must be installed at each anchor point to prevent accidental release or opening.
 - b. Individual belt straps must be independent; any method or attempt to combine individual straps is prohibited.
 - c. Elastic retention straps are prohibited on shoulder belts

- 5.1.3. Harnesses must be replaced at the request of IMSA, or whenever the following conditions occur:
- a. Expiration:
 - i. FIA Homologated: Immediately following December 31st of the year printed on the label.
 - ii. SFI Certified (punched/cut label): Two years from the date as stated on label. If label is not properly “cut” by the manufacturer or their representative, the date for expiration shall be January 1st of the earliest year printed on the label + two years
 - iii. SFI Certified (non-punched label): On June 30th or December 31st: of the year identified as the date for expiration
 - b. Damage:
 - i. Following a severe collision.
 - ii. Webbing is cut or frayed, or weakened due to actions of chemicals or sunlight.
 - iii. Buckles are bent, deformed, rusted, or improperly functioning.
- 5.1.4. Entrants are responsible for ensuring the Driver safety harnesses and all associated components are properly labeled, installed, used, and maintained.
- 5.1.5. Belt components must be used as designed by the manufacturer and tested by SFI or FIA. It is prohibited to “mix” belt components to include:
- a. Belt components from different manufacturers.
 - b. Belt components certified by SFI and FIA.

5.2. Seat

- 5.2.1. As Homologated

5.3. Driver Containment Nets – GT3/GT4/TCR

- 5.3.1. Cars must be equipped with center, and Driver-side containment nets with a valid label demonstrating compliance with one of the following:
- a. FIA Standard 8863-2013: Racing Nets
 - i. [FIA Technical List #48](#): Racing Nets Homologated according to the FIA Standard 8863-2013
 - b. SFI Specification 37.1: Roll Cage Nets
 - i. [Specification](#)
 - ii. [Manufacturers](#)
- 5.3.2. Installation requirements:
- a. Supplier and/or manufacturer installation instructions must be respected.
 - b. Horizontal webbing must be oriented towards the Driver.
 - c. When secured at anchor points, nets must be:
 - i. Oriented parallel to the Car centerline.
 - ii. Located with minimal gap to the Driver's helmet.
 - d. Signage or equipment may be attached to nets provided:
 - i. The designed purpose of the net is respected.
 - ii. Visibility over and/or through the net is unobstructed.
- 5.3.3. Containment nets must be replaced prior to the expiration date:
- a. FIA Homologated: Immediately following December 31st of the year printed on the label.
 - b. SFI Certified: (punched/cut label): Two years from the date as stated on label. If label is not properly “cut” by the manufacturer or their representative, the date for expiration shall be January 1st of the earliest year printed on the label + two year.
 - c. SFI Certified (non-punched label): On June 30th or December 31st: of the year identified as the date for expiration.

5.4. Protective Padding

- 5.4.1. Cars must be equipped with non-flammable protective padding with a valid label demonstrating compliance with one of the following standards:
 - a. FIA Standard 8857-2001: FIA Roll Cage Padding Standard
 - i. [FIA Technical List #23](#): Roll Cage Padding Homologated by the FIA
 - b. SFI Specification 45.1: Roll Cage Padding
 - i. [Specification](#)
 - ii. [Manufacturers](#)
- 5.4.2. Installation requirements:
 - a. Padding must be located to protect the Driver (body and/or helmet) against direct contact with the safety cage in a collision.
 - b. Protective padding must be securely affixed to prevent rolling or displacement.

5.5. Protective Shielding

- 5.5.1. Cars may be equipped with shielding to protect the Driver against contact with cockpit equipment in a collision.
- 5.5.2. Installation requirements:
 - a. Installations must not impact cockpit exit.
 - b. Installations of protective shielding must use fire-resistant materials and if impact padding is used it must comply with FIA 8857-2001, SFI 45.1 or SFI 45.2.
 - c. Installations must be presented to and approved by IMSA at the time of technical inspection.

5.6. Master Electrical Switches

- 5.6.1. As homologated
- 5.6.2. Systems must remain functional during any on-track activity or at the request of IMSA.
- 5.6.3. Interior and exterior master switches must be clearly identified by a self-reflective symbol of a red spark surrounded by a white-edged, blue triangle with a base greater than 30 mm.

5.7. Fire Suppression System

- 5.7.1. Cars must be equipped with a fire extinguisher system with a valid label demonstrating compliance with one of the following standards:
 - a. FIA Standard for plumbed-in Fire Extinguisher Systems in Competition Cars (1999):
 - i. [FIA Technical List #16](#): Extinguisher Systems Homologated by the FIA
 - b. FIA Standard 8865-2015: Plumbed-in and Hand-Held Fire Extinguisher Systems
 - i. [FIA Technical List #52](#): Plumbed-in Fire Extinguisher Systems according to FIA Standard 8865-2015
 - c. SFI Specification 17.1: On Board Fire Suppression Systems
 - i. [Specification](#)
 - ii. [Manufacturers](#)
- 5.7.2. Extinguishing media must be compatible with all aspects and accessories of the fire suppression system.
 - a. Compliance with FIA 8865-2016 is mandatory.
 - b. All system components must be used and serviced per manufacturer specifications.

- 5.7.3. System must be securely mounted.
 - a. The following must be visible without the use of photography, tools, or seat removal:
 - i. Pressure gauge (if present)
 - ii. Date of manufacture
 - iii. Next required service date
 - b. Nozzles must not point directly at the Driver's face.
- 5.7.4. System must include an exterior activation mechanism proximal to the exterior master electrical switch at (or near) the base of the left side A-Pillar.
 - a. Exterior activation mechanism must be located such that emergency responders may activate with a single action:
 - i. Using a gloved finger, or tools such as a hook.
 - ii. Unencumbered by bodywork, windshield wipers, or any equipment that may require multiple actions.
 - b. A method for preventing activation of the exterior activation mechanism:
 - i. May be enabled when the Car is in Technical Inspection, in the Paddock, or located near large crowds, such as during pre-Race activities.
 - ii. Must be removed prior to participation in on-track activity.
- 5.7.5. Identification
 - a. Exterior activation mechanism must be marked with a self-reflective symbol with a red edge surrounding a red "E" inside a white circle at least 100 mm in diameter.
- 5.7.6. Inspection
 - a. IMSA may require removal of the fire bottle for Technical Inspection.
 - b. Entrant is responsible to demonstrate proper system function of the interior and exterior fire suppression activation mechanisms, using the "test" mode if present.

ARTICLE 6. VEHICLE SYSTEMS

6.1. General

- 6.1.1. All Vehicle Systems and associated sub-systems are listed in this Article.
 - a. Where change to the Homologated vehicle system is permitted, regulatory text is **bold and underlined**.
 - b. Where change to the Homologated vehicle system is prohibited, regulatory text is **light grey**.
 - c. Advisory statements are in normal text.
 - d. Regulations that apply to a specific class (or classes) are noted with the class designation
 - e. Where no specific class designation is present, the regulation applies to all classes.

6.2. Modifications to the Specification

- 6.2.1. Entrants may execute the following changes to parameters defined by the Homologated component of the Car Model Specification, provided these Technical Regulations and all current Technical Bulletins are fully respected:
 - a. Adjust component settings defined as adjustable.
 - b. Replace components with parts defined as optional.

6.3. Dimensions

6.3.1. General

6.3.2. Reference Surface

- a. The lowest plane of the underside of the car of the Car is measured to the Technical Inspection scale plane.

6.3.3. Mass

- a. The minimum mass for all Car Models is defined via Balance of Performance Tables and associated Technical Bulletins.
- b. Car mass is measured as-raced minus Driver and Fuel using the IMSA scales during Technical Inspection.
- c. IMSA scales are the official scale of measurement.

6.3.4. Ballast

a. Entrants may add or remove ballast to achieve minimum mass:

- i. Ballast must be in plate or panel form.
- ii. Addition or removal of ballast during the race is prohibited.

b. Entrants using Cars without specific Homologated locations must:

- i. Locate all ballast inside the cockpit in the passenger's location.
- ii. Secure all ballast per FIA Article 253-16 in both dimensions and characteristics of fixation methods.
- iii. Design fixations such that tools are required for its removal.

6.3.5. Ground Clearance

a. GT3/GT4/TCR

- i. The minimum ground clearance for applicable Car Models is defined via Balance of Performance Tables and associated Technical Bulletins.
- ii. Ground clearance is measured across the complete underside of Car Model during Technical Inspection.

b. LMP3

- i. Maximum skid block wear is 5.0 mm

6.3.6. Overall Dimensions

- a. Length
- b. Width
- c. Height
- d. Wheelbase
- e. Track
- f. Overhang
- g. Width

6.4. Chassis

6.4.1. General

a. Entrants may execute minimum modifications for the installation of mandatory or permitted components.

- i. All modifications must be approved by IMSA.

6.4.2. Air Jack System – GT4/TCR

a. Air Wand Receptacle

- i. Air wand receptacles may be repositioned symmetrically about the longitudinal axis of the car unless alternate mounting locations are specifically identified in the Homologation Document.

6.5. Driver Interface

6.5.1. General

a. Entrants may install up to two (2) defogging fans and associated ducts – GT4

- i. Installations must be approved by IMSA
- ii. System must not serve an additional purpose
- iii. System must not inhibit visibility or cockpit ingress/egress

b. Entrants may install a driver hydration system.

- i. Installations must be approved by IMSA
- ii. System must not serve any additional purpose

6.5.2. Steering Wheel

6.5.3. Pedal Box

a. Entrants may apply non-slip adhesives to the surface of driver pedals.

6.5.4. Shifting Mechanism

6.5.5. Driver Adjustable Components

6.5.6. Driver Cooling Systems

a. Entrants may install a maximum of two (2) Driver Cooling Systems, i.e. Cool Suits.

- i. Evaporative-loss Freon cool suits are prohibited.
- b. Installations must be approved by IMSA and meet the following conditions:
 - i. The mounting location and installation for the primary system is unrestricted provided it serves no purpose other than retaining the cooling system in the event of a collision.
 - ii. Any secondary driver cooling system must be mounted on the top of the ballast box.
 - iii. All driver cooling system containers must be securely mounted.
 - iv. The use of hook and loop fasteners (Velcro) is prohibited.
- c. Entrants may install Driver Ventilation Ducts
 - i. A NACA duct may be installed on the side window, rear quarter window, OR the rear window for the purpose of cooling the driver
 - ii. Maximum of 1 per side with 2 ducts permitted per car
 - iii. Maximum cutout area of 26 cm x 16 cm
 - iv. No duct shall break the outward plane of the surface on which it is installed
 - v. Ducts must be translucent
 - vi. Duct and/or hoses must not impede cockpit exit or driver's visibility

6.6. Bodywork

6.6.1. General

a. Entrants may install the following films to the front windscreen:

- i. Tear-off
- ii. Anti-fog

6.6.2. Bodywork Seams

a. Entrants may apply tape over the body seams around refueling receptacles.

6.6.3. Decals

a. Entrants may apply removable die cut sponsorship decals with the approval of IMSA.

6.7. Aerodynamic Elements

- 6.7.1. General
- 6.7.2. Splitter
- 6.7.3. Dive Planes
- 6.7.4. Body Gurney
- 6.7.5. Wings
- 6.7.6. Rear Wing Gurney
- 6.7.7. Floor
- 6.7.8. Friction Blocks
- 6.7.9. Diffuser

6.8. Engine System

- 6.8.1. General
 - a. Manufacturer seals must be respected
- 6.8.2. Engine
- 6.8.3. Lambda – GT3
 - a. The minimum lambda value is defined via Balance of Performance Tables and associated Technical Bulletins
- 6.8.4. Engine RPM – GT3/GT4/TCR
 - a. The maximum engine RPM limits for all Car Models are defined via Balance of Performance Tables and associated Technical Bulletins.
 - b. The RPM limit is considered exceeded when either of these conditions occur:
 - i. Engine RPM exceeds RPM limit for >250 ms, and throttle >60% of the maximum
 - ii. Engine RPM >1.0% over RPM limit for more than 100 ms, and throttle >60% of the maximum, i.e. an 8000 RPM limit means >8080 RPM for >100 ms.
- 6.8.5. Intake
 - a. The assigned inlet air restrictor diameter(s) for all Car Models is defined via Balance of Performance Tables and associated Technical Bulletins. – GT3/GT4/TCR
 - i. All air entering the engine must pass through the restrictor.
 - b. Intake air restrictors are sealed by IMSA Technical Officials during Pre-Event Technical Inspection
 - i. Entrants must receive approval from IMSA to remove seals following inspection, and seals must be replaced by IMSA Technical Officials prior to on-track activity
- 6.8.6. Air Filter
- 6.8.7. Exhaust
- 6.8.8. Turbo
- 6.8.9. Engine Control Unit (ECU)

6.9. Boost Management

6.9.1. Maximum Boost Pressure

- a. The maximum boost pressure for applicable Car Models is defined via Balance of Performance Tables and associated Technical Bulletins.

6.9.2. Boost Pressure Ratio – GT3

- a. The table of maximum boost pressure ratio versus engine RPM for applicable Car Models is defined via Balance of Performance Tables and associated Technical Bulletins:
 - i. All values between the tabulated set points defined via the table are interpolated linearly.

6.9.3. Boost Control Strategy Inputs – GT3

Parameter	Description	TB*
Maximum Boost Pressure Ratio (Max Pboost Ratio)	Curve of Maximum Boost Pressure Ratio as a function of Engine RPM	TB
Actual Boost Pressure (Pboost)	Intake manifold pressure measured in accordance with these Technical Regulations In case of two separate intake manifolds, the average of the two manifold pressure sensors will be referenced	
Filtered Boost Pressure (Pboost Filtered)	Exponentially weighted moving average of Actual Boost Pressure. Defined as: $(P_{boost\ Filtered})_n = (P_{boost})_n * (C_{E_{Fill}}) + (P_{boost\ Filtered})_{n-1} * (1 - C_{E_{Fill}})$	
Filter Coefficient ($C_{E_{Fill}}$)	Coefficient that defines weighting for Filtered Boost Pressure	
Barometric Pressure Reference	Absolute barometric pressure reading will be recorded by IMSA's calibrated barometer at noon on setup day of a race event The official reading will be promptly released in a Technical Bulletin and is in effect for the remainder of the event	TB
Actual RPM	Unfiltered RPM value measured in accordance with these Technical Regulations	
Actual Throttle	Engine throttle position measured in accordance with these Technical Regulations In case of two engine throttles, the maximum value of the two throttle positions is referenced	
RPM Threshold	An RPM threshold which is used as a condition	
Resultant Boost	$(P_{boost\ Filtered}) - (Barometric\ Pressure\ Reference) * (Max\ P_{boost\ Ratio})$	
Integral	Area under the Resultant Boost as a function of time curve in units of pressure-time	
Integral Time Step	Time step of the Integral	
Integral Decay	A value in units of pressure-time subtracted from the Integral when the integral is positive	
Low Overboost Level	A lower overboost limit in units of pressure time	
Lower Overboost Counter	A counter which is incremented when the Low Overboost Level is met or exceeded Low Overboost Counter limits must never be exceeded	
Low Overboost Counter Reset Condition	A time-based condition that will reset the Low Overboost Counter	
High Overboost Level	A maximum overboost limit in units of pressure-time that can never be met or exceeded	

* All parameters indicated with TB are defined via Technical Bulletin.

Session Classification	RPM Threshold	Throttle Threshold	Integral Time Step	Integral Decay	Filter Coefficient	Low Overboost Level	High Overboost Level	Low Overboost Counter Limit	Low Overboost Counter Reset Conditions
	[RPM]	[%]	[s]	[mb*s]		[mb*s]	[mb*s]		
Qualifying	2000	25	0.001	5	0.1718	30	100	1	Crossing Start/Finish Timing Loop, Crossing Pit-In Timing Loop, Crossing Pit-Out Timing Loop
All Other Sessions	2000	25	0.001	5	0.1718	30	100	5	Crossing Pit-In Timing Loop, Crossing Pit-Out Timing Loop

6.9.4. Calculation Method – GT3

- a. Resultant Boost is integrated over time at each time step at a rate equal to Integral Time Step when:
 - i. [(Actual RPM) >= (RPM Threshold)] AND [(Actual Throttle) >= (Throttle Threshold)] AND [(Resultant Boost) > 0]
 - ii. The current Integral value is added to the initial Integral value
- b. The Integral Decay is subtracted from the Integral when Resultant Boost < 0
 - i. This value is always positive
 - ii. (Integral) – (Integral Decay) >= 0
- c. A Low Overboost Counter is incremented if:
 - i. (Integral) >= (Low Overboost Level)
- d. It is a violation of the boost regulations if either:
 - i. The Low Overboost Counter Limit is exceeded
 - ii. (Integral) >= (High Overboost Level)
- e. The Integral is reset to zero (0) if:
 - i. [(Actual RPM) <= (RPM Threshold)] OR [(Actual Throttle) <= (Throttle Threshold)]
- f. The Integral value is held in memory as an initial condition for the next time step.

6.9.5. Low Overboost Counter Usage Limitation – GT3

- a. Automated or driver-initiated control strategies used for competitive advantage that result in Low Overboost counters are not permitted.
 - i. Examples include push-to-pass and overtake buttons.

6.9.6. Calculation Method – GT4

- a. Allowable events beyond the maximum boost pressure are calculated as:
 - i. Up to 7% over the maximum boost pressure, not to exceed 7% of the time duration for that lap.
 - ii. Total time over the 7% maximum boost pressure must not exceed 3% of the time for that lap.
 - iii. No single event beyond the maximum boost pressure may exceed two (2) seconds in duration.
 - iv. No single spike can exceed 125% of the maximum boost pressure.

6.10. Drive System

6.10.1. General

- a. Manufacturer seals must be respected

6.10.2. Fluids & Lubricants

- a. **Unrestricted.**

6.10.3. Clutch

6.10.4. Gearbox

6.10.5. Gears

6.10.6. Gearbox Control Unit

6.10.7. Differential

6.10.8. Axles

6.10.9. Uprights

6.11. Cooling System

6.11.1. General

6.11.2. Fluids

a. Entrants may utilize non-glycol based fluids.

6.11.3. Inlet Blockers – GT3

a. Entrants may utilize the following methods for the sole purpose of blocking off portions of the cooling system inlet openings:

- i. Opaque adhesive tape.
- ii. Panels made from carbon fiber and/or aluminum with associated fastener hardware

6.11.4. Water System

6.11.5. Oil Cooling System

6.12. Fuel System

6.12.1. General

6.12.2. Fuel Types

- a. The approved fuel for the Class is IMSA E10, as supplied by VP Fuels.
 - i. IMSA may require a fuel sample for inspection via a gas chromatograph.

6.12.3. Fuel Cell

a. Maximum Capacity

- i. The fuel cell maximum capacity for all Car Models is defined via Balance of Performance Tables and associated Technical Bulletins.

b. Entrants may use blocks or balls to achieve maximum fuel cell capacity:

- i. Any device, system, or procedure designed to increase, even temporarily, the total fuel storage capacity beyond the maximum is prohibited.

6.12.4. Fuel Lines

6.12.5. Fuel Sample Port

a. Entrants must equip the Car with the approved self-sealing connector for extraction of fuel samples:

- i. Approved Connector: Staubli P/N: CBI06.7251/IA/JKV.
- ii. Must be located immediately before the injector nozzles.
- iii. Installation must be approved by IMSA.

6.12.6. Refueling Receptacle

6.13. Brake System

6.13.1. General

6.13.2. Fluids & Lubricants

a. Unrestricted.

6.13.3. Bias Assembly

6.13.4. Master Cylinders

6.13.5. Brake Lines

6.13.6. Calipers

6.13.7. Rotors

6.13.8. Pads

- a. **Friction material is unrestricted.**
- b. Backing Plates must be ferrous.

6.13.9. Ducting

6.13.10. Brake Duct Inlet Blockers

- a. **Entrants may utilize the following methods for the sole purpose of blocking off portions of the brake duct inlet openings:**
 - i. Opaque adhesive tape.
 - ii. Panels made from carbon fiber and/or aluminum with associated fastener hardware.
 - iii. Must be fixed.

6.13.11. Anti-Lock Braking System

6.14. Steering System

6.14.1. General

6.14.2. Fluids & Lubricants

- a. **Unrestricted.**

6.15. Suspension System

6.15.1. General

6.15.2. Geometry Elements

6.15.3. Springs

6.15.4. Dampers

6.15.5. Bump Rubbers and Packers

- a. **Unrestricted.**

6.15.6. Anti-Roll Bar

6.15.7. Third Elements

6.16. Wheels & Tires

6.16.1. General

6.16.2. Wheels

6.16.3. Wheel Attachment – GT4

- a. **Entrants may lengthen/modify wheel lugs to facilitate wheel changes:**
 - i. The lug type is unrestricted, i.e. bolt vs. stud.
 - ii. The lug/nut assembly must not protrude beyond the outer plane of the wheel.

6.16.4. Tires

- a. The approved tire supplier for this Event is Michelin.

6.17. Electronics

6.17.1. General

6.17.2. Data Logger

- a. **Entrants may install a data acquisition system where not available in the As-delivered Car.**
- b. IMSA reserves the right to download and/or view all logged data at any time.

- 6.17.3. Telemetry – GT3
 - a. **Entrants may utilize one-way telemetry systems for data acquisition purposes.**
- 6.17.4. Wiring Loom
 - a. All data acquisition equipment must use a separate visible and traceable wiring loom.
- 6.17.5. Sensors
 - a. **Entrants may install the following approved sensors/inputs - GT4**
 - i. One longitudinal and one lateral G load sensor
 - ii. Front and/or rear brake pressures
 - iii. Wheel speed sensors (maximum 4)
 - iv. Steering input
 - v. Throttle position
 - vi. Water Temperature
 - vii. Oil Pressure
 - viii. Oil Temperature
 - ix. Gearbox Temperature
 - x. Differential (or Rear End) Temperature
 - xi. Fuel Pressure
 - xii. GPS
 - xiii. CAN Interface
 - xiv. Manifold Pressure / Vacuum (Mandatory on cars with Forced Induction)
- 6.17.6. Radio
 - a. **Entrants may install a single two-way voice radio with car-to-pit communication capability in compliance with the corresponding Series Sporting Regulations.**
- 6.17.7. Rear View Camera
 - a. **Where not homologated, Entrants may install a rear-view camera system.**
- 6.17.8. Auxiliary Power Sources

ARTICLE 7. SERIES REQUIRED ELECTRONICS

7.1. Series Scrutineering Data System

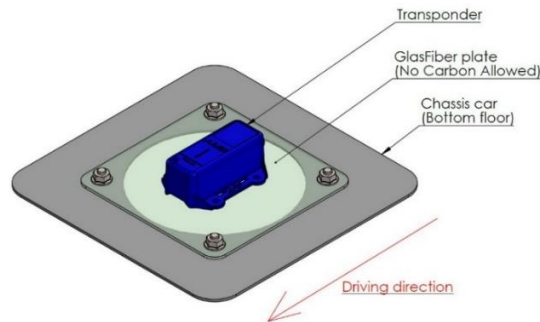
- 7.1.1. Cars must be equipped with an IMSA-supplied data logger *when requested*.
 - a. Cars must have a dedicated 12 V power lead to install the IMSA-supplied data logger.
 - b. Power lead shall remain on as long as the master kill is switch is on.
 - c. Entrant is responsible for the proper installation, operation, and safe handling of all Series Scrutineering Data System Components
 - d. Series Scrutineering Logger must be fully functional when on-track
 - e. Data Cards (Media) are property of IMSA and shall be distributed once load-in is complete
- 7.1.2. Series Scrutineering Data System collection requirements are:
 - a. Entrants must present all series mandated data collection media to the IMSA Technical Inspection trailer within thirty (30) minutes of the completion of each session.
 - i. For sessions within one (1) hour of one another, Data shall not be required to presented after the first session
 - b. Failure to present media within the specified window may result in a penalty including (but not limited to) a stop and hold plus five (5) minutes.

7.2. Safety Light System

- 7.2.1. Cars must be equipped with the MSE/Delphi Yellow Light Kit to indicate active flag status.
- a. The Kit contains the following components:
 - i. Yellow Indicator Light
 - ii. Mounting Bracket
 - iii. Antenna
 - iv. Wiring Loom and Instructions
- 7.2.2. The Safety Light system must be installed and functioning during on-track activity.
- a. The Yellow Indicator Light must be prominently installed within the cockpit, in clear line of sight of the driver.
 - b. Antenna Installation: The supplied antenna must be mounted:
 - i. On the Car roof
 - ii. Away from other antennae
 - c. Wiring Loom Installation: The Wiring Loom has a flying lead input for +12 VDC and Ground to interface with additional wiring referenced in the installation instructions.
 - i. Entrants must supply additional wiring as required.
- 7.2.3. An activating receiver is available from IMSA during Safety Checks at the Event and remains the property of IMSA.
- a. Entrants must surrender the receiver when required by IMSA.
 - b. A lost or damaged receiver is subject to a replacement fee referenced in the IMSA Accessories form

7.3. Driver ID System

- 7.3.1. Cars must be equipped with a Driver ID system to identify the active Driver piloting the Car.
- a. Driver ID Kit contains the following components:
 - i. Three (3) Driver ID plugs
 - ii. Transponder
 - iii. Transponder Wiring Loom
- 7.3.2. Driver ID transponder system must be installed and functioning during the Event.
- a. Outside interference must not exceed those levels commonly used in the automotive industry, as described in 95/54/EEG.
 - b. **Transponder installation – GT3**
 - i. In a horizontal orientation with the arrow pointed towards the front of the car as shown below:



- ii. With appropriate thermal protection in an area where the temperature cannot exceed 50 °C
 - iii. Above non-conductive surfaces such as fiberglass or aramid panel
- c. **Transponder installation – LMP3/GT4/TCR**
 - i. In a vertical orientation
 - ii. With appropriate thermal protection in an area where the temperature cannot exceed 50 °C
 - iii. Above non-conductive surfaces such as fiberglass or aramid panel

- d. Transponder consumes less than 40 mA (10-30 VDC), and must:
 - i. Be a fused, 12-volt DC configuration
 - ii. Meet the specifications defined by ISO 7637
 - e. Transponder connection cables must be installed with appropriate thermal protection against temperatures exceeding:
 - i. Black Cables: 150 °C
 - ii. Blue Cables: 70 °C
 - f. In cases where the cable installation requires severing the Driver ID transponder loom, the Entrant must:
 - i. Fit an appropriate connector
 - ii. Ensure the integrity of the system connectivity is always maintained
 - g. Female Driver ID plug(s), (i.e. Driver #1 through Driver #5) may be installed inside the Car cockpit or attached to the individual Drivers' helmets.
 - i. Alternative installation types must be approved by IMSA.
 - h. Entrant is responsible for replacing a lost or damaged Driver ID Transponder.
 - i. Replacement cost is listed in the IMSA Accessories Order Form
- 7.3.3. Transponder and plugs must be tested and operate to the satisfaction of the Timing and Scoring Officials.

7.4. X2 Transponder System – GT3

- 7.4.1. GT3 cars competing in the IMSA WeatherTech Sportscar Series must be equipped with the X2 Transponder System Kit to transmit scrutineering data from the car and serve as a backup to the primary Driver ID Transponder.
 - a. Kit contains the following component(s):
 - i. Transponder.
 - ii. Isolation Mounts.
 - b. Entrant must supply the following additional item(s):
 - i. X2 Transponder Mounting Bracket (available for purchase as listed in the IMSA Accessories Order Form).
 - ii. M4 Socket Head Cap Screw and Washer.
- 7.4.2. X2 transponder is provided by IMSA during Safety Checks at the Event, and:
 - i. Remains the property of IMSA
 - ii. Entrants must surrender the transponder when required by IMSA
 - iii. Entrants is responsible for replacing a lost or damaged X2 transponder, per the IMSA Accessories Order Form.
- 7.4.3. Transponder system must be installed, as per IMSA approved Car Model's Scrutineering Homologation documentation, and functioning during the Event.
 - a. Must be installed with appropriate thermal protection where the temperature cannot exceed 50 °C

7.5. Leader Light System

Not Applicable

7.6. Back-lit Panel

Not Applicable

7.7. Pro-Am Light

Not Applicable

7.8. In-Car Camera

Not Applicable

ARTICLE 8. REFUELING SYSTEM

8.1. Fuel Transfer

- 8.1.1. Fuel may be transferred from the autonomous supply tank to the Car using the equipment and methods defined in this Article.
- a. Approved equipment as defined herein must be:
 - i. Unmodified.
 - ii. Installed and operational.
 - b. Approved method:
 - i. Gravity.

8.2. Pit Tank

- 8.2.1. Construction of the Autonomous Supply Tank must:
- a. Comply with FIA Appendix J Drawing n° 252-7 with the exception of the top plate shape and dimensions.
 - b. Have a simple cylindrical internal shape.
 - c. Not have any additional internal parts that could improve flow.
 - d. Have a tolerance on bottom flatness of less than 3 mm inside the tank.
 - e. Have the flow restrictor top face at the level of the internal surface of the bottom of the supply tank.
- 8.2.2. Refueling tank height is measured from the top surface of the vessel, not including vent, cover plate or fasteners, to the track surface where the refueling takes place.
- 8.2.3. Maximum refueling tank heights are:
- i. 6.0 feet or as listed on the Balance of Performance Chart

8.3. Peripheral Connections

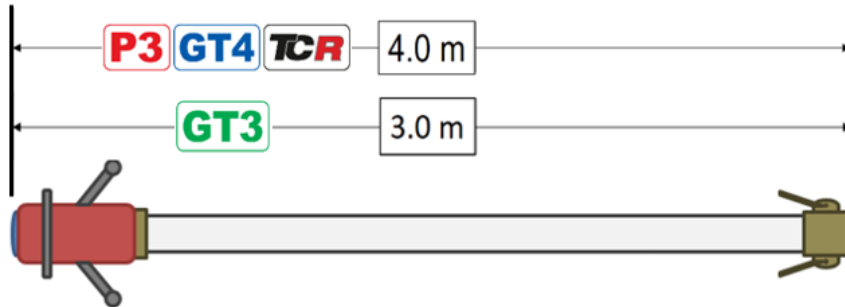
- 8.3.1. Tanks must be equipped with the IMSA-specified peripheral connections between the tank outlet and the refueling hose.
- a. Parts must be purchased from RPXpress and used unmodified:

Part Number	Part	Description
BSR-FR FN40	Restrictor Housing	Bottom Tank 12-bolt housing
ATL-TF 147	12-Bolt Gasket	
BSR-FR 1981	Bottom 80 deg. Elbow	Female Camlock x 2" Male
BSR-P5K56	Adapter	Adapter 2" Male to 1 1/2" Camlock
BSR.P.5K.RPX.SS	Hose Coupler	1.5" OD barb to Deadman outlet
1 Deadman Valve:		
BSR-FR-R003	Deadman Valve (new design)	Stainless Deadman Valve
BSR-FR-R002	Deadman Valve (old design)	Brass Deadman Valve
Restrictor:		
BSR-FR-RXXX	Individual Restrictors (GT4, TCR)	XX indicates restrictor diameter in mm
BSR-FR-R290	Mandatory Restrictor (LMP3)	29.0 mm restrictor

- 8.3.2. Deadman valve and bottom 80 deg. elbow assembly must be securely braced to remain attached to the tank in the event of an incident.
 - a. Mechanisms preventing normal operation of the deadman valve are prohibited.
- 8.3.3. During refueling the air vent outlet must be connected using an appropriate coupling to the tank.
- 8.3.4. A sight glass may be installed to the outside of the supply tank, and must be equipped with isolating valves mounted as close as possible to the tank.

8.4. Refueling Hose

- 8.4.1. Refueling hose must have one end equipped with a self-sealing connector to fit the autonomous supply tank outlet.
- 8.4.2. Refueling hose maximum inside diameter must be less than 1.5 inches.
- 8.4.3. Refueling hose minimum length must be greater than:
 - i. LMP3, GT4, TCR - 4.0 m
 - ii. GT3 – 3.0 m
- b. Minimum length is measured from the most distant plane of the dry break/fuel probe to the most distant plane of the Hose Coupler.



8.5. Tank Support Stand

- 8.5.1. The tank must be attached to one of the following:
 - a. To a trolley meeting the following requirements:
 - i. All tower components must be assembled without any degree of freedom in relation to the trolley.
 - ii. Have a surface area greater than two (2) square meters.
 - iii. Utilize four (4) self-braking casters.
 - iv. Be ballasted with a weight exceeding that of the tank when filled with fuel.
 - b. Scissor style (X-brace) stand
- 8.5.2. A system for weighing the fuel may be applied by:
 - a. Placing a weighing plate underneath tank.
 - b. Ensuring the characteristics set out above are respected.

8.6. Boom – GT3

8.6.1. Entrants may attach a member (boom) to the trolley.

- a. Boom must be independent of the tank and the tower.
 - i. Boom member must be permitted a degree of freedom in relation to the trolley (rotation following a vertical axis).
- b. Boom may support:
 - i. Hose for a Car utilizing an approved offset vent or fuel filler.
 - ii. Lighting for the illumination of the pit stop.
 - iii. Download cable.

8.6.2. Boom must be identified with the Car number fixed to its outboard end, that must be:

- a. Visible from either direction
- b. A minimum of seven (7) inches high with a 1.25-inch stroke

8.6.3. Boom must respect the following dimensions:

- a. Must not exceed four (4) meters in length

8.6.4. Must permit free passage of a height of two (2) meters over its entire length including hoses and/or accessories

8.7. Refueling Restrictor

8.7.1. During refueling, all fuel entering the Car must pass through the refueling restrictor.

8.7.2. IMSA may adjust the refueling rig restrictor diameter and refueling rig height via Balance of Performance Tables and associated Technical Bulletins.

8.7.3. The following bolts must be drilled for safety-wire sealing of the restrictor

- a. Two (2) adjacent Bolt heads of the Restrictor Housing Flange
- b. Two (2) Hinge Bolts (threaded section) of the Outlet Pipe Cam Lock
- c. Two (2) Lock Lever Arms of the Outlet Pipe Cam Lock

8.8. Level Sensor System

Not Applicable