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# 2019 BMW CCA CLUB RACING RULES

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#### IMPORTANT NOTE:

No express or implied warranty of safety or fitness for a particular purpose shall result from publication of, or compliance with, these rules and/or regulations. They are intended as a guide for the sport and are in no way a guarantee against injury or death to participants, spectators or others.

# 1. PREFACE

- A. The philosophy of BMW CCA Club Racing is to offer all BMW CCA licensed club racers a competitive driving experience conducted in a fun, safe, and friendly environment on a reasonably level, class-based playing field for all types of factory authorized or constructed BMW's. The primary emphasis is on clean driving and machinery preservation. This philosophy will be maintained by the application of common rules and procedures by the BMW CCA Club Racing Stewards at each event.
- B. These rules are intended to be simple, easy to read and brief. The rules are framed around the basic premise that all modifications or alterations to the stock car, as available by BMW in the United States through its authorized dealer network, are prohibited unless specifically stated herein as being allowed. All competitors are expected to conform to the stated philosophy and rules, and to embrace the spirit of BMW CCA Club Racing. That spirit is founded in the belief that the fun of the friendly competition is more important than the results and that mutual assistance among racers when possible enhances the experience for all.
- C. The **SPORT** classes are for race cars with specified modifications to provide an entry point for club racers. All other modifications to the vehicle are intended for safety purposes only.
- D. The **Prepared** classes allow participation with a higher level of modification than the Sport classes, but remain in keeping with the spirit of the "original" vehicle. All Sport class improvements are also allowed in the prepared classes.
- E. The **Modified** classes are for race cars with a still higher level of modification than the Prepared Classes and require use of both a BMW engine and a BMW transmission. All Prepared class improvements are also allowed in the Modified classes.
- F. The **Super Modified** class is intended for race cars where the modifications exceed those allowed in the Modified classes and, additionally, for those designated purpose-built, BMW-powered race cars that meet the eligibility criteria. A BMW engine is required, but alternate transmissions are allowed. All Modified Class improvements are also allowed in Super Modified class.
- G. The **SpecE36™** class is intended for the racer who desires an "even playing field" with a tightly specified level of preparation and performance. The Spec E36™ class specifies a set of E36 chassis,

six-cylinder race cars that are prepared to a uniform level. The modifications required or allowed are intended to produce a fun, fast race car that feels like a race car, yet remains relatively inexpensive to prepare and maintain. There are required or mandatory suspension and tire components. Spec E36 is a trademark of the BMW Car Club of America.

- H. The **E30 M3 Touring Car** class is intended to provide a single class in which drivers of first-generation M3s may compete against similar cars at a preparation level greater than stock but not as costly as the modified classes. This class would have the potential to be the home of M3s formerly classed in Stock and Prepared. Assignment to this class is not mandatory. E30 M3s would still be allowed in the appropriate Sport, Prepared, or Modified classes, depending on their preparation levels.
- I. The **SpecE30** class is intended for the racer who desires an “even playing field” with a specific level of preparation and performance. This class specifies a set of E30 chassis, six-cylinder race cars that are prepared to a uniform level. Except for the required minimum vehicle safety equipment for Club Racing, the rules for this class “mirrors” those of NASA/SpecE30 and will allow a direct cross-over from NASA to Club Racing.
- J. The **Spec MINI** class is intended for the racer who desires to race in Club Racing with a base Mini prepared to SCCA Spec B/T4 rules published in the SCCA GCR. All vehicle safety equipment, other than roll cages, must meet or exceed all published Club Racing safety requirements.
- K. The **SpecE46** class is intended for the racer who desires to race in Club Racing with a non-M e46 chassis prepared to specified rules available on specE46.com. All vehicle safety equipment must meet or exceed all published Club Racing safety requirements.

## 2. GENERAL RULES

- A. **Philosophy** – The BMW CCA Club Racing Program is designed to be fun, safe and competitive. Good sportsmanship, honesty, and a sense of fair play should exist at all BMW CCA Club Racing events.
- B. **13/13 Rule** – The "13/13 rule" of vintage racing will be in effect at all BMW CCA Club Racing program events. Conduct that jeopardizes safety or results in dangerous or damaging situations will not be tolerated.
  - 1. Any single- or multi-car incident that results in car damage, significant damage to the facility, or personal injury to anyone will cause the BMW CCA Club Racing Competition Steward to collect and review all information relating to the incident, including corner worker and other observer reports, driver statements, video evidence, and damage reports in order to make a determination of fault and assess penalties. The Technical Steward will assist the Competition Steward with mechanical inspection and damage assessment. The Competition Steward should consider all available information and the input of his steward team in making the final assessment. A driver who is found to be at fault shall be listed as disqualified (DQ) in any applicable race results and placed on probation or suspended from competition thereafter. Said driver will not be eligible for points or sponsor/giveaway awards at that event, and will be required to attend the "rookie meeting" at the next event in which they compete.
    - a. Single-car incidents or secondary responsibility in multi-car incidents shall have a probation period of 3, 6, 9, or 13 months or a number of Club Racing events (1 CR event equals 1 weekend), at the discretion of the Competition Steward based upon the circumstances of the incident.
    - b. Primary responsibility in a multi-car incident shall have a probation period of 3, 6, 9 or 13 months or a number of Club Racing events (1 CR event equals 1 weekend), at the discretion of the Competition Steward based upon the circumstances of the incident.
    - c. If a driver in any way responsible is already on probation, his competition privileges shall be suspended for 13 months.
    - d. At the discretion of the Competition Steward, any or all of the following penalties may be additionally imposed upon a driver found to be at fault:



- (1) Exclusion from competition for the remainder of the day or the event at which the incident occurs.
  - (2) Suspension from his next home region BMW CCA Club Racing event in which he could have competed.
2. Penalties at an event may be assessed by the event Competition Steward for any infraction of the rules, incident, or personal conduct that is not keeping with the spirit and philosophy of BMW CCA Club Racing. The following are some actions that could warrant a penalty:
  - a. Passing under a yellow or red flag
  - b. Blocking
  - c. Technical, Licensing, Competition, or Event rules infraction
  - d. Unsportsmanlike conduct (on or off the track)
  - e. Reckless and dangerous driving or behavior
3. Penalties are intended to emphasize the driver's focus on SAFETY and good sportsmanship, which are the tenets of BMW CCA Club Racing. Penalties for these types of incidents will be based on evaluation by the Competition Steward of the driver's attitude and behavior. For example, blocking may initially incur a furred or waved black flag. Other penalties available include but are not limited to 3-, 6-, 9-, and 13-month probations or probation for a number of Club Racing events (1 CR event equals 1 weekend), suspension (if already on probation), finishing position reduction, overall time penalty, lap(s) penalty, starting grid position adjustment, race disqualification, and refusal of further event participation.
4. Blocking. A racer is allowed one defensive movement of his or her race car on any given segment of the track (straight or turn) to protect his or her overall race position from a pass. Any additional movement or movements is considered blocking and subject to penalty.
5. Any driver involved in an on-track incident causing visible damage to their or another driver's car must report to the event Technical Steward with the car (if drivable) within 30 minutes of the checkered flag of the session in which damage incurred.
  - a. Failure to do so will subject the driver to a 6- to 13-month probation penalty in addition to any other penalty assessed as a result of the incident (thus, the total probation penalty could be as high as 26 months).

- b. Claims of mechanical failure must be declared to the Technical Steward during this period for inspection and verification.
  - 6. All incidents shall be resolved as soon as practical after the incident is reported/observed with the objective being verbal resolution and assessment of penalty (if applicable) before the next track session.
  - 7. Drivers who are penalized will be notified in writing within 10 business days by the event Competition Steward of the penalty assessed. Drivers are required to carry said notice with their logbook and present this letter to the Club Racing Competition Stewards before going on track at each event they participate while the penalty is in effect. Co-drivers and drivers without logbooks must also present any notice of penalty to the race Competition Stewards at any events in which they participate while the penalty is in effect.
  - 8. Penalties are not considered confidential. Protests and appeals remain confidential until they are decided, and are not confidential afterwards. Final results of protests, penalties and appeals will be posted on the Club Racing website by BMW CCA Club Racing Officials under the section "General Information> For the racer".
  - 9. Drivers are responsible for their guests and crew. Inappropriate actions by guests or crew can result in a penalty for the driver.
  - 10. In the case where there is damage to the track, the financial liability will be placed upon the racer who is at primary fault for the incident. The racer will pay for the damages upon written request by BMW CCA Club Racing. Failure to comply with the written request will result in immediate revocation of the racer's competition license.
- C. **Driver Eligibility** – Only BMW CCA Club Racing Program licensed drivers are eligible to compete.
- D. **Return from Suspension** – Any driver attempting to return from suspension of his BMW CCA Club Racing license will undergo a mandatory review of his application by the Chairman. If accepted, the Chairman may apply restrictions or conditions to the applicant's license, including a return under probationary, rookie, or provisional status. In every case, a driver returning from suspension will return at most under the requirements of their previously assigned license category.

The Chairman may refuse readmission to the BMW CCA Club Racing program if it is determined to be in the best interests of the program and its participants. This decision is final and may not be appealed, but

a request for reconsideration may be made every 12 months if new supporting information becomes available.

- E. **Unlisted Modifications** – Any modification, adjustment, alteration of stock items, and/or installation of equipment or part(s) not specifically and purposefully listed is NOT allowed. In other words, if the rules don't say you can do it—DON'T. Drivers are reminded that they assume ultimate responsibility for their race car's conformance to all rules, regulations, and specifications even if they did not perform the work themselves. Every driver is responsible to ensure that all work done and all parts installed on his race car are accomplished in a manner that ensures conformance with all applicable rules.

Except for Spec E36, Spec E46 and M3T, any modification allowed at a particular level of preparation is allowed at all higher levels, (that is, modifications allowed in sport class are also allowed in prepared, modified, and super modified). No allowed modifications may perform the function of an illegal modification.

- F. **Steward's Decisions** – All decisions of the BMW CCA Club Racing Stewards concerning safety, eligibility, competition, acceptance, or other issues covered by the Club Racing rules are binding and cannot be protested or appealed at that event. If the racer does not agree with the Stewards' decision(s), within 10 business days after the event he or she may submit a non-penalty related grievance (appeals are used to appeal penalties) directly to the National Competition Steward. The National Competition Steward will convene a committee to review the grievance and determine appropriate action, if any.

G. **Eligible Vehicles**

1. BMW-manufactured automobiles, using BMW-manufactured chassis, engine case, and transmission case. Engine and transmission must have been factory designated for automotive application.
2. BMW factory-built chassis with cages (commonly referred to as a Motorsport chassis) eligible in Modified and Super-Modified. These chassis do not require a vehicle identification number (VIN). Chassis without U.S. VINs are also allowed.
3. Factory-approved race cars are eligible. Documentation of factory approval is the responsibility of the car owner.
4. Purpose-built, BMW-powered race cars specifically approved by BMW CCA Club Racing.
5. Open-wheel cars are not eligible.

- H. **Classification** – All cars must be entered in their appropriate class. Cars may not enter a higher class unless their configuration warrants

the classification. For example, a car eligible for D Modified may not run under C Modified, and any Modified class car may not run under the Super Modified class unless it contains modifications not allowed in the Modified class.

#### **I. Car Numbers, Class Identification, Decals**

1. All cars must display easily readable numbers and class designation for identification. These must be displayed on each side, front (hood) and rear of the vehicle, of significant size and color differentiation from the background color so as to be clearly seen by event officials. Side and hood numbers shall be a minimum of 8 inches high with a 1.5- to 2-inch stroke. The rear number shall be a minimum of 3 inches high with a minimum 0.5-inch stroke. Class identification shall be near the numbers and be a minimum of 3 inches high. Class identification will normally consist of two letters, (such as A Modified = AM, I Prepared = IP, J Sport = JS, Super Modified = SM). Cars running in the Spec E36 class must use the class identification SE36. Cars entered in the E30 M3 Touring class must display the identification M3T.
2. Competitors may request assigned numbers from the National Timing and Scoring Steward. The goal is to allow racers to use requested numbers as long as the requested number is not already assigned. Where duplications at an event exist (due to grandfathered duplicate numbers or numbers on cars that are also running in non-BMW CCA Club Racing series), deference will be given to the racer with the lowest BMW CCA Club Racing license number. Race officials reserve the right to assign car numbers for specific events.
3. Club Racing officials may require series and sponsor identification (decals) in specific size, contrast, and placement to be displayed on cars before being allowed on track. These requirements are specified on the web site "General Information-for the racer".

Alternate sponsor decals, other than those provided through BMW CCA Club Racing, may be used with the specific agreement of the sponsor. It is the racer's responsibility to obtain the sponsor's agreement and have such documentation available at each event.

4. Vehicles driven by license holders with a license status of Rookie must display the rookie decal, yellow circled "X", at the rear of the car.
5. BMW's with a declared class under another sanctioning body's rules may have markings as specified by the applicable sanctioning body rules rather than those specified herein. These cars will be required to display the Tire Rack windshield banner.

- J. **Vehicle Appearance** – Vehicles entered in the program must, in addition to meeting safety and classification rules and regulations, be presented in an attractive and eye-pleasing manner. BMW CCA Club Racing Stewards reserve the right to refuse entry to any vehicle that they feel does not “conform to the spirit” of the BMW CCA Club Racing Program.
- K. **Reclassification** – BMW CCA Club Racing national officials reserve the right to reclassify race cars based upon previous performance or performance potential.
- L. **Award Eligibility** – Vehicles must compete in the class to which they are correctly classified and run in at least one session to be eligible for awards.
- M. **Tow Points** – All race cars must be equipped with front and rear tow points. Tow points shall not protrude dangerously from the bodywork. Webbed nylon strap or folding hook styles are recommended. These tow points must be easily accessible without removal or manipulation of bodywork or other panels, be capable of sustaining the stresses of towing, and must have a minimum inside diameter of two inches.
- N. **Alcohol and Drugs** – No driver may participate in any on-track activity within an event while under the influence of a substance, prescriptive or otherwise, including alcohol, which has the potential to negatively affect the driver's performance. Alcohol is not to be consumed by any racer, member of a racer's crew, racer's guests, event volunteers, or event staff until such time as the last car in the day's last run group or session is off the track.
- O. **Pregnancy Policy** – The BMW CCA Club Racing Medical Committee has determined that driving race cars while pregnant poses many risks to unborn children. During the first trimester the risks for injury to the child from x-rays possibly needed to stabilize an injured driver can result in birth defects. After the first trimester the potential for placental injury in a non-life threatening crash is high.
  - 1. BMW CCA Club Racing does not recommend racing while pregnant, and BMW CCA Club Racing expressly prohibits racing after the first trimester.
  - 2. Female racers who are pregnant or suspect they may be pregnant are encouraged to seek medical advice from their physician regarding their participation in BMW CCA Club Racing.
  - 3. Additionally, the racer is required to notify the National Licensing Coordinator that she is pregnant as soon as practically possible after such determination. She must provide a statement from the attending physician that establishes the end of the first trimester. While pregnant, the racer must note such on her event Medical

Information form, which is a required part of each entry application.

4. Anyone wishing to participate as a driver in any BMW CCA Club Racing event while pregnant must sign an acknowledgement of this policy and a waiver of liability and return them to the National Licensing Coordinator.
- P. **Medical Condition Affecting Fitness of Driver** – Any new medical condition (including pregnancy) since the last licensing exam that could affect a racer's medical fitness to compete must be reported immediately to the BMW CCA Club Racing Medical Committee for review. The driver may not compete until recertified by the BMW CCA Club Racing Medical Committee.
- Q. **Timing Transponders** – AMB transponders must be turned on and functioning properly for all on-track sessions at events in which they are expected to be in use. The Timing and Scoring Steward may black flag any car on track without an active AMB transponder. The Competition Steward may then choose to further penalize any driver who fails to activate their transponder after this first warning.
- R. **Passengers** – Passengers are not permitted on the track during any session run under race sanction.
- S. **Officials Communication** – Where and when possible Club Racing Officials will make announcements and provide course condition updates over radios on FRS channel 7, sub channel 1.
- T. **Statement of Interpretation**
1. If differing interpretations are possible, a specific rule will prevail over a general rule. For example, a rule may state "no changes giving a competitive advantage may be made" (general rule) versus "Accusumps are permitted" (specific rule). Even though some may argue that Accusumps give a competitive advantage the specific rule will prevail over the general rule.
  2. No rule is intended to exist in a vacuum; each rule should be read in the context of all rules. If there are two possible interpretations to a rule, and one interpretation conflicts with another rule, or makes another rule meaningless, that interpretation will be rejected in favor of an interpretation that is not in conflict with any other rule or makes another rule meaningless.
  3. Each rule must be read in its entirety. An interpretation of a part of a rule that conflicts with another part of the rule or makes another part of the rule meaningless will be rejected in favor of an interpretation that gives meaning to and does not conflict with other parts of the rule.

### 3. SAFETY

- A. The following safety regulations apply to all cars in all classes. If you are in doubt as to an interpretation, ask. If you are going to err, err on the side of being too safe!
- B. **TECH INSPECTION**
  - 1. In order to enter the race course at any time during an event, a vehicle shall display a Tech Sticker signifying successful completion of technical and safety inspection as prescribed in the following sections. Passing safety inspection and receiving a Tech Sticker is an indication that the car is eligible to go on course. It is not a certification of legality or safety.
  - 2. Technical inspection assists event officials with determining, in their judgment, eligibility for participation in a BMW CCA Club Racing sanctioned event. The technical inspection does not ensure, certify, or warrant that the vehicle or any part thereof is safe or totally and ultimately compliant with all applicable rules. The technical inspection does not in any way change the fact that the driver, the crew members, and the vehicle owner are ultimately responsible for the safety and operation of the vehicle and equipment. By conducting a technical inspection, BMW CCA Club Racing and each of its directors, officers, employees, and officials, make no representations, warranties, or assurances that a technical inspection, including the review of any written information, will do any or all of the following:
    - a. Detect every or any problem with a vehicle or a driver's personal equipment or clothing
    - b. Detect every problem with rule compliance
    - c. Prevent bodily injury, death, or personal monetary damage.
  - 3. The participant agrees that the participant bears the ultimate responsibility at all times to ensure the safety of participant's vehicle, equipment, and clothing and compliance with all BMW CCA Club Racing rules, regulations, and agreements, including but not limited to those contained in this rulebook. Moreover, in the case of technical violations, the participant acknowledges, understands, and agrees that the participant is charged with full knowledge of every component of participant's vehicle and that even if a third party (for example, an engine builder) has caused the participant's vehicle to be noncompliant, the participant will still be responsible for and charged with any applicable violation and penalty.

4. **ANNUAL TECH** – All race cars in a BMW CCA Club Racing declared class must undergo a comprehensive annual inspection prior to participation in any Club Racing event within the prior 365 days (Annual Period). If a racer is unable to complete an annual tech before their first race of the new Annual Period, they must contact the Tech Steward assigned to their first race at least two weeks before the event to arrange an annual tech, either at the event (if mutually agreeable) or at another location. Before the annual tech inspection is performed, the car owner must complete the Annual Tech Inspection form and validate it with his signature. The Inspection form, logbook, driver safety gear, and car are then presented to an authorized Club Racing tech inspector either by prior appointment outside, or as early as possible at an event. Following successful completion of the inspection, the form will be signed by the inspector and stapled to the logbook. The logbook is then presented to the Tech Steward at each event for the remainder of that Annual Period. (09-0012)

All official Tech Stewards are authorized to sign off annual tech inspections. Club Racing may designate other authorized inspectors and if so will publish such approved inspectors on the national Club Racing Web site. The entrant is reminded that the fitness of the car for competition is ultimately the responsibility of the entrant. If significant modifications or accident repairs are made to the car a new annual tech inspection may be required.

5. **EVENT TECH** – All cars must be comprehensively prepared prior to arrival at the track. If the race car has completed a current-season annual technical and personal equipment inspection, and it is stapled to the race car's logbook, the racer should present only the current logbook and all required personal safety gear to the event Technical Steward. The race car does not need to be presented unless there is an outstanding discrepancy noted from in the logbook from the prior event, or if the Technical Steward requires it. The Technical Steward may ask for the race car to be presented for inspection at any time during the event.
  - a. Any vehicle deemed unsafe by BMW CCA Club Racing Stewards will not be allowed on track until all deficiencies have been addressed to the Stewards' satisfaction.
  - b. Equipment and /or vehicle modifications will not be considered as having been approved by reason of having passed through inspection unobserved or uncommented upon.
  - c. Any racer who fails to present his race car for a required or requested technical inspection will be immediately disqualified for all applicable sessions and for the remainder of the event and placed on mandatory 13 month probation. The racer may

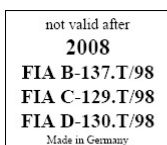


be suspended for 13 months if both the Technical Steward and the Competition Steward agree that circumstances warrant such action.

6. **TECH FOR RULES COMPLIANCE, WEIGHING** – Tech Stewards may require onsite, detailed tech inspection for rules compliance at any time during an event, including weighing any car or detailed tech inspection of entries in a specific class or classes at a race.
7. **IMPOUND** – To promote careful adherence by all competitors to the car classification and preparation rules, Club Racing Stewards reserve the right to conduct impound and inspection of any or all race cars in any or all classes at any time. Cars found to be at variance with the class rules will be denied their finishing positions (or other penalty as deemed appropriate), and the variances will be recorded in the individual logbooks.
8. **INSPECTION** – Tech Stewards may request disassembly and/or inspection of any entered car to ascertain its compliance with these rules. If the car is found to be in compliance, BMW CCA Club Racing shall stand the expense of disassembly, inspection, and reassembly. If found not to be in compliance, the competitor shall bear these expenses.
9. **CLASS DECLARATION** – An entrant's application to participate in an event is a statement that the car is in compliance with all rules applicable to its declared class. The racer assumes final responsibility for properly declaring the class of the car.
10. **LOST LOGBOOK** – If a race car that has previously competed in BMW CCA Club Racing (either by its current or former owner) is presented without its existing logbook (for any reason), the lost logbook process must be followed.
  - a. The owner or driver must purchase a “replacement” logbook from the event Tech Steward, for a fee to be established by BMW CCA Club Racing.
  - b. The car must be presented for a complete and thorough technical and safety inspection. Any previous allowances or grandfathering is voided without the logbook in which these were noted; the current requirements must be met.
  - c. The words “REPLACEMENT” must be noted in heavy ink on the front cover of the replacement logbook by the Tech Steward.
  - d. After the event, both the replacement logbook and the original logbook, if found, must be sent to the National Tech Steward, who will attach them together and annotate them appropriately.

- C. **HELMETS** are required to have either a Snell Foundation Special Application (automotive) rating of **SA-2010** or newer; an SFI rating of **SFI 31.1a** for open-faced helmets or **SFI 31.2a** for closed faced (if purchased prior to 12/31/04), or **SFI 31.1** (if purchased after 1/1/05); or an **FIA 8860** rating. (Snell **M**-rated helmets are **not** allowed). Drivers of vehicles without full windshields are required to have either a full-face helmet with shield in place or use protective goggles. It is recommended that all drivers wear either a full-face helmet with the shield in place or protective goggles. Any helmet exhibiting visible cracks must be replaced. In the event of a significant impact with the ground (dropping the helmet by accident) or contact with the roll cage, the helmet must be replaced. If a helmet's face shield is not used by a racer to meet the eye protection requirements then removing it from the helmet is recommended.
- D. **ROLL CAGES** – All classes require a full roll cage. A diagonal brace is required in the rear hoop. All cages must be mounted metal-to-metal, of approved materials and of proper size as listed in Appendix A. Side impact “door bars” may be added to any cage and the driver's side and passenger side door and door panels may be modified or removed to accommodate them. Bolt-in cages are not permitted in race cars that were issued logbooks after 1/1/2007.
1. The top of the drivers helmet, when the driver is properly attired and seated, must have a two-inch clearance below the plane created between the top of the front and main roll hoops if the vehicle is participating without a roof or hard top solidly affixed.
  2. **SPORT/PREPARED/SpecE36/E30 M3 Touring** class roll cages shall be bolted or welded into the car, contained entirely within the driver/passenger compartment, and include six attachment points as shown in Appendix A. A maximum of two additional bars may be extended from each front roll cage hoop down bar to the front wheel well (two on each side) to protect the occupant's feet/legs. The two foot protection bars on each side must use the same mounting point on the wheel well.
    - a. Attachment points **MUST** be metal to metal. Main hoop rear braces may be mounted to the frame or chassis (rear shock mounts, shock towers or accessible frame rails). Such rear braces may pass through any rear bulkhead or panel separating the driver/passenger compartment from the trunk/cargo area/fuel tank/fuel cell area, provided the bulkhead or panel is sealed around said cage braces. Cage tubing cannot be welded or bolted to the sides or roof.
  3. **MODIFIED and SUPER MODIFIED** – cage construction is free provided it complies with the basic structure outlined in Appendix A. The cage attach points and number of attach points are free.

4. **ALL CLASSES – ROLLBAR PADDING** – Half-round SFI 45.1 or FIA 8857-2001 Type A, high-density roll bar padding is required to cover any tubular element of the roll cage that may possibly contact the head and in particular any bar that is within 12 inches of the head. Padding must be secured with zip-ties, duct tape, or high-strength adhesive or a combination thereof. Low-density, soft-tubular padding can be used in other areas such as door bars and shin bars but may not be used in any potential head contact area.
- E. **SAFETY HARNESES** – All drivers in BMW CCA Club Racing events must utilize a 6- or 7-point harness, meeting SFI 16.1, SFI 16.5, FIA 8853 standards, with a 2-inch or 3-inch lap belt, 2-inch anti-sub strap, and 2-inch (HANS use only) or 3-inch shoulder belts. **Sternum straps are not recommended and are not permitted with the HANS device.**



- (B) = no anti-sub strap (4-point harness)
- (C) = with anti-sub strap I (5-point)
- (D) = with anti-sub strap II, F-models and HYBRID (6 point)

1. **SFI CERTIFICATION** – SFI tagged harnesses are punched with the month and year of manufacture. SFI certifications (16.1 and 16.5) shall expire two years after the date of manufacture at the end of the month of manufacture as indicated on the label. There should be three labels on each complete harness—one on a shoulder belt, one lap belt, and one sub-strap.

For example, a harness SFI-tagged with a manufacturing date of 4/2018 would expire at the end of April 2020.

2. **FIA CERTIFICATION** – FIA harnesses have tags printed by each manufacturer. FIA harness certifications are good for a period of 5 years from the date of manufacture. FIA harnesses may be used until December 31st of the year printed (or stamped) on the tag. There should be one FIA tag on each element of the harness.

For example, a harness FIA-tagged with an expiration year of 2020 expires December 31, 2020.

3. **NO CERTIFICATION** – Harnesses that do not have certification tags on all required positions and/or with any date out of certification range will not be permitted. Properly certified

harnesses meeting these specifications must be used at all times during practice, qualifying, and the race. Harnesses must have the appropriate tag (FIA, SFI) to be considered certified.

4. **BELT REPLACEMENT** – Regardless of the date of manufacture, the safety harness shall be replaced if the webbing is cut/frayed, significantly faded, or if the webbing has any visible damage to the surface. The safety harness must also be replaced if any of the buckles are bent or cracked, or if the car has been in a severe impact. If any of these conditions exist, the Tech Steward shall cut the certification labels off of the harness.
5. **TWO-INCH LAP BELTS** – Two-inch lap belts are strongly recommended. Two-inch lap belts have been shown to provide faster loading of the lap belt resulting in lower loads to the chest, head, and neck. Fitment around the pelvis is better allowing the belt to be worn tighter while being more comfortable and easier to adjust. The smaller adjusters are less likely to get caught up in the small lap belt holes provided in most seats. Two-inch lap belts are currently only available with FIA certified harnesses.
6. **APPROVED HARNESS CONFIGURATIONS AND INSTALLATION REQUIREMENTS** – Please refer to APPENDIX B for approved configurations and installation standards.

#### F. **DRIVING APPAREL**

1. A driver is required to wear a suit that covers his or her entire body except for hands, feet, and head.
  - a. Driving suits shall carry a rating of SFI 3.2A/1 rating or higher (3.2A/5, 3.2A/10, 3.2A/15, or 3.2A/20) or FIA 8856-2000, FIA NORME 1986/1986, or FIA 8856-1986.
    - (1) SFI suits rated 3.2A/1 must be worn in conjunction with full length upper and lower fire-rated underwear.
  - b. Regardless of the number of layers of a suit, fire retardant NOMEX® or Carbon-X underwear is strongly recommended.
    - (1) Any underwear including t-shirts, boxers, and socks should be fire-rated material. Cotton underwear is not recommended as it does not wick away the moisture and can result in serious steam burns in the event of a fire.
2. Fire-retardant socks and gloves are required.
3. Driving shoes of a fire-retardant material are required.
4. Drivers with mustaches and/or beards must wear a fire-retardant balaclava.

**G. FIRE SAFETY** – On-board fire systems are required for all cars.

1. On-board fire systems shall use one of the following:
  - a. Halon 1301 or 1211, with a five-pound minimum capacity (by weight). There shall be a minimum of two nozzle locations, one in the driver's compartment and one in either the engine area or the fuel cell area.
  - b. Aqueous Film-Forming Foam (AFFF) or equivalent surfactant foam material (for example, SPA Lite, ZERO 2000, Coldfire 302), 2.25-liter minimum capacity (by volume).
    - (1) If such a system is used, the appropriate atomizing nozzles shall be used.
    - (2) All AFFF fire system bottles shall incorporate a functional pressure gauge and shall be marked with the manufacturer's recommended "filled weight."
  - c. Halotron with a five-pound minimum capacity (by weight). There shall be a minimum of two nozzle locations, one in the driver's compartment and one in either the engine area or the fuel cell area.
  - d. Dupont FE36 with a five-pound minimum capacity (by weight). There shall be a minimum of two nozzle locations, one in the driver's compartment and one in either the engine area or the fuel cell area.
2. CO<sup>2</sup> cartridge propellant fire extinguishing systems are permitted, provided that the seal of the manufacturer-specified CO<sup>2</sup> cartridge is not punctured and the fire bottle is equal to the weight specified by the system manufacturer.
3. Manual or automatic release is allowed.
4. The release mechanism shall be within reach of the driver when belted in the car.
5. All on-board fire systems shall be identified with the red and white circle "E" decal.



6. The firing safety pin(s) shall be removed from all on-board fire systems prior to going on track.

**H. WINDOWS, WINDOW NETS and INTERIOR "RIGHT SIDE" NETS**

1. **WINDSHIELD** – The windshield shall have:
  - a. No more than three distinct and different cracks exceeding 20 inches combined length, and
  - b. No single visible round imperfection that is larger than 1.5 inches in any dimension, and
  - c. No single crack that runs from opposite edges (side to side or top to bottom), and
  - d. No single crack that is through both the inside and outside surfaces at any point, and
  - e. No impairment to the racer's forward vision from either external or internal imperfections in the glass, including "sandblasting" effect. If such items are found to exist, the Technical Steward may issue a one-time exception in the race car's logbook requiring replacement by the next event so long as, in the Steward's sole judgment, the structural integrity of the windshield is not immediately compromised and the driver's vision is not dangerously impaired.
  - f. Windshield retention clips are allowed and encouraged in all classes.
2. **WINDOW NET** – Both front door windows must be completely down and an approved window net and attachment system fitted to the driver's window area. **The window net must be attached to the cage and NOT to the door.** Holes must not be drilled in the cage to mount the window net. All window nets must be a minimum of 17 x 21 inches and SFI 27.1 rated. Net design must allow for quick one-handed removal in the event of an accident. The net must be mounted securely at the top and bottom with provision for a quick one-handed disconnect **at one of the top ends of the net.** The quick release must be easily visible from outside the car. Drop down nets are required to minimize possible complications during emergency exit or extraction from the vehicle. The use of plastic tie wraps (zip-ties) is not allowed for mounting. Straps may be used providing they are part of the installation kit provided by the manufacturer of a certified net.
  - a. Window nets shall expire two years after the date of manufacture at the end of the month of manufacture as indicated on the label. Window nets without a certification label shall be considered as expired and must be replaced.
3. **INTERIOR NETS** – Interior nets are required. Interior nets (also called right side nets) are designed to capture the head and shoulder in angled and side impacts. The triangular-shaped net should be attached to the roll cage just behind the seat with the

upper part capturing the head just below the line of sight and the lower part capturing at least six inches below the top of the shoulder. The net should wrap around the seat at least a few inches to provide additional support to the upper part of the seat. It should be attached to the front part of the cage, the chassis, or a combination of both with a quick release lever towards the front attachment point for emergency exit.



- a. The right side net can be attached either to the cage, the chassis, or a combination of both. When a car's roll cage has no dash cross bar, a cable may be run from the firewall (connected to the firewall using heavy backing plates) to just past the dash (after removing the radio or center vent as required). The interior net's front connection may then be made to that cable.
- b. Effective 1 Jan 2010:
  - (1) The interior net must be SFI 37.1 rated and shall expire two years after the date of manufacture at the end of month of manufacture as indicated on the label.
  - (2) Interior nets without a certification label shall be considered as expired and must be replaced.
  - (3) Interior nets that qualify under the FIA 8863-2013 standard are good for 5 years from the year of manufacture and expire December 31<sup>st</sup> of the year printed on the nets.
4. **TINT** – Tinted REAR windows are specifically disallowed in all classes and the use of tinting is discouraged in all windows. Original equipment (OE) window tinting is allowed. The purpose of this rule is to address dark aftermarket tinting that causes real safety issues in driver awareness and communication.
- I. **OPEN CARS – ARM RESTRAINTS** – Open cars (including convertibles with installed hardtop) must be equipped with approved arm restraints.

- J. **SEATS, SEATBACK BRACES** – Seats homologated to and mounted in accordance with FIA standard 8855-1999 or higher need not have a seat back attached to the roll structure. The homologation labels must be visible. Seat supports shall be of the type listed on FIA technical list No. 12 (lateral, bottom, etc). Seats that have an expired FIA certification (over five years old) or do not have an FIA certification require seat back bracing, even if the back of the seat is very close to the horizontal roll cage tube.
1. Should seat back bracing be required, it must be attached to the horizontal tube on the main hoop of the cage. Braces must either be bolted securely to the seat utilizing a metal plate of no less than 12 square inches to distribute the load, **OR**, if not bolted to the seat, a brace of similar minimum dimensions must be in contact with the seat back. Minimal energy absorbing padding is allowed between the brace and seat back. It is recommended that if not attached to the seat the brace be designed where possible to wrap around both sides of the seat to prevent lateral movement. Contact your Regional Technical Steward with any specific application questions.
  2. **Seats** – A one-piece bucket-type racing-style seat is required for the driver.
  3. **Hardware** – the minimum diameter of all seat-fastening hardware must be 8 mm. 2002s, 530i's and early 320i's must upgrade the original 6 mm hardware. It is strongly recommended that the seat mounting pads on these early cars be strengthened to withstand the loads of racing.
  4. **Headrests**, either integral with the seat or separate, are required. The headrest must extend above the midpoint of the back of the helmet on the vertical plane of the seatback with the driver in the normal seating position.
  5. **Aluminum seats** – most “circle-track” type aluminum seats are not designed for installation into production sedans. Circle-track aluminum seats are designed to be mounted entirely to the roll cage structure. If used, they must be mounted to a minimum of two points at the bottom front and two points at the bottom rear, and at shoulder height to a bar traversing the main center hoop, ideally with a mounting structure across the entire back of the seat (“L” type mount). Aluminum seats must be sized to the driver, in fit and in strength, based on the weight of the driver. The seat manufacturer should be consulted before use if the weight of the driver exceeds 200 pounds. “Rib-protector” options on these seats are not recommended. Aluminum seat technology is rapidly changing. Please consult the National Safety Steward with specific questions to the appropriateness of any aluminum seat.



- K. **HEAD AND NECK RESTRAINTS** – All racers must use a Head and Neck Restraint meeting standards of SFI 38.1 or FIA 8858-2002. The SFI standard can be found at <http://www.sfifoundation.com/manuf.html#38.1>.
1. The FIA standard can be found at [https://www.fia.com/sites/default/files/regulation/file/3\\_FIA\\_Stand\\_8858\\_2002\\_Hans\\_0.pdf](https://www.fia.com/sites/default/files/regulation/file/3_FIA_Stand_8858_2002_Hans_0.pdf)
  2. For HANS Device users, harness shoulder belt webbing must be in direct contact with the yoke of the HANS; there shall not be any padding between the shoulder harness webbing and the yoke of the HANS. Sternum straps are not allowed for use with the HANS due to possible interference issues. HANS-specific two-inch hybrid shoulder straps may be used in conjunction with this system providing they meet harness certifications from FIA, SFI 16.1, or SFI 16.5.
  3. Any HANS device must have a Silver and Blue SFI 38.1 Sticker and/or a Silver and Black FIA **8858-2002** sticker. The SFI sticker is punched with month and year.
  4. Head and Neck Restraint Devices which only carry a Black FIA **8858-2002** sticker (no SFI sticker) must have the tethers replaced five (5) years after the date of manufacturer.
  5. Head and Neck Restraint Devices which are certified to SFI Spec. 38.1 must be inspected and recertified every five (5) years, effective January 1, 2012. For BMW CCA CR, the enforcement date will be extended ninety (90) days and will commence April 1, 2012. The device must be sent back to the **Original Manufacturer** for inspection after five (5) years from the date of manufacture punched out on the label. When a device is determined by the original manufacturer to be acceptable for continued use, a new SFI 38.1 conformance label marked with the inspection date will be affixed and the device will be valid for use for another five (5) years from that date.
  6. Any devices approved under SFI 38.1 will be deemed to be automatically added to the list of approved devices for BMW CCA Club Racing. Any head and neck restraint system must be inspected after a serious incident. If any cracking, delaminating or elongation has occurred, the unit must be replaced.
  7. Devices that meet or claim to meet SFI or FIA specifications but do not actually carry an SFI or FIA certification sticker are not approved.
- L. **AIRBAGS AND STEERING WHEELS** – Non-stock steering wheels are allowed in all classes. Airbags may be disconnected during on-

track sessions in all classes and may be removed from the stock steering wheel. Steering wheel locks shall be removed or disabled.

- M. **REAR BULKHEAD** – A sealed metal bulkhead between the passenger compartment and the compartment containing the fuel tank is required on cars using a fuel cell or where the fuel tank is not totally under the car floor (for example, it is required in 1600/2002 models). A bulkhead is highly recommended on cars where the fuel tank is under the body (for example, all E36 models).
- N. **SUNROOFS** must remain completely closed.
- O. **FLOOR MATS** must be removed. Driver side carpet and associated underlying interior insulation materials may be removed. Carpet is not required to be OE.
- P. **HUBCAPS, TRIM RINGS, etc.** must be removed.
- Q. **LUG NUTS** must be original manufacturer specification with engagement at least equal to the diameter of the wheel lug studs. The use of wheel studs to replace lug bolts is allowed and highly recommended. Wheel studs/nuts and/or lug bolts should be replaced every three years.
- R. **OIL LINES** – All oil lines on the pressure side of the oil pump must be thread-on connections equal to or better than the factory (that is, slip-on oil lines to coolers, gauges, etc. are not allowed).
- S. **ELECTRICAL CUT-OFF SWITCH**, with standard, approved location decal, mounted externally (preferably on the driver's side), is required for all race cars competing in all classes. The switch must disconnect the battery from all circuits, (except an electronically operated fire system) and must shut off the engine and alternator while it is running. Method of operation may be by pull wire, requiring no external body modification. (See Appendix C).
- T. **BATTERY TERMINAL** – The positive battery terminal must be fully insulated. No part of the positive battery terminal or uninsulated portion of the positive battery cable may be visible. A sealed marine-style battery box satisfies this requirement.
- U. **CATCH TANK** for radiator overflow and oil breather (if vented into the atmosphere) is mandatory. Transmission breather catch tanks are strongly recommended. Differential breather catch tanks are permitted.
- V. **SOUND LEVEL** – All competitors' cars must not exceed a maximum sound emission level of 103 dB as measured from a distance of 50 feet from the edge of the track. More restrictive standards may apply by a track or event. Competitors bear sole responsibility to determine that their vehicles comply with Sound Control Regulations at

each event. Mufflers may be required. Note that many tracks now have sound limits as low as 89 db.

- W. **ENGINE COOLANT** – Use of an antifreeze/coolant substitute (for example, “Water Wetter”) is highly encouraged for all competitors. Antifreeze may only be used when deemed necessary for climatic reasons. NOTE: Some local tracks and racing venues prohibit the use of ethylene glycol. In these cases, race cars using ethylene glycol may be prohibited from participation.
- X. **PERSONAL MEDICAL INFORMATION** – BMW CCA Club Racing recommends use of personal medical information to be worn by all drivers.
  - 1. Drivers with diabetes or who are undergoing medically directed anti-coagulant treatment must either:
    - a. Have the Medical Carrier Information System, or equivalent, pouch with this information attached to their helmet
    - b. Alternatively, have a label on their helmet indicating Diabetic or Anti-Coagulant
- Y. **CAMERA MOUNTS** – Cameras/camcorders must use at least one bolt to attach to the mount and at least one additional strap or tether must be used to secure the camera. A tether must be made of high-tensile webbing or steel, and must be short enough to prevent the camera from reaching any part of the driver. These rules of attachment do not apply to “lipstick” or “bullet” cameras that serve as remote lenses for a separate recording device. These lenses may be secured using items such as cable ties and racer tape.
- Z. **DRIVER COMFORT SYSTEMS** – Driver comfort systems, such as chilled water systems and air ducting with or without fans and/or filters, may be added to any car provided they do not violate any other specific rule. All driver cooling systems must be securely mounted to the chassis or roll cage. Components not bolted (for example, water/ice containers) must be secured by safety straps.
- AA. **BALLAST** – Any ballast to meet weight must be placed entirely in the front and/or rear passenger side floor area and/or the spare tire well in the trunk, and must be securely bolted to the chassis. Each segment of ballast must weigh not more than 50 pounds, and must be fastened with a minimum of two 12 mm bolts and positive lock nuts of metric grade 8.8 or better, and must utilize large diameter, load-distributing washers. Ballast may not be added or removed during any officially timed session.
- BB. **HOOD PINS** – Hood pins are allowed in all classes, but this does not permit the removal of stock hinges where not permitted under other

- rules. The stock latching mechanism may be removed when at least two hood pins are used to hold the hood closed.
- CC. **FUEL AND OIL HOSES** or lines passing into the drivers compartment must be stainless, Kevlar braided, or rigid metallic.
- DD. **HEADLIGHTS** may be covered (protected).
- EE. **EJECT HELMET REMOVAL SYSTEMS** are permitted and recommended. Such systems give emergency medical personnel the ability to remove an injured driver's helmet with a reduced chance of injury to the neck and cervical spine.
- FF. **HEATER CORES** may be bypassed in all classes, either with a straight bypass, or by using a bypass valve.
- GG. **RAIN LIGHTS** A red FIA-certified high-intensity rear LED rain light is mandatory in all classes. The Competition Steward for the race shall determine if the race is to be categorized as a "rain race." To be allowed to run in a rain race, all cars must have at least two functioning taillights and a FIA-approved rain light. Any car without an operating rain light shall be black flagged.
- The FIA-approved rain light and taillights must be steady "ON," not flashing.
- The FIA-approved rain light must be secured to the exterior of the car on a vertical or near vertical surface in the center of the car (recommended mounting location is the rear plate area). The view of the rain light shall not be obstructed by glass, lenses, or other parts. The FIA-approved rain light is required as part of the car's annual safety inspection.
- A list of FIA-approved rain light manufacturers can be found at: [https://www.fia.com/sites/default/files/lt\\_19-feu\\_pluie.pdf](https://www.fia.com/sites/default/files/lt_19-feu_pluie.pdf)

## 4. CAR CLASSIFICATION

### A. NON-BMW CCA CLUB RACING CLASSIFICATIONS

1. BMW's, defined to be BMW-manufactured chassis and engine combinations, prepared to and competing in other non-vintage regional or national sanctioning bodies programs may participate in BMW CCA Club Racing adhering to the applicable sanctioning body's class preparation rules and within the class for which they are prepared.
2. Competitors must be able to present an official copy of the most current rules and regulations applicable to the declared class.
3. Competitors must present a logbook complete with a current annual inspection issued by the sanctioning body for the declared class at Technical Inspection.
  - a. BMW's prepared to the rules of a sanctioning body that does not issue log books or annual inspections must present evidence of recent participation in the declared class.
    - (1) Complete technical inspection for compliance with applicable safety requirements is required at each event.
  - b. Without logbook or participation documentation the entrant must conform to appropriate BMW CCA Club Racing class rules.
4. Competitors must comply with all of the declared class vehicle preparation rules without exception.
5. Personal safety gear (including but not limited to: head and neck restraint, suit, shoes, gloves, helmet, arm restraints, etc.) and vehicle safety equipment must meet or exceed BMW CCA Club Racing requirements. Right sided interior nets are required.
6. Non- BMW race cars may participate as an Exhibition Class. Competitors must have an active competition license with an approved series (IMSA, SCCA, HSR, SVRA, NASA, PCA), must obtain membership with BMW CCA, must obtain a complimentary BMW CCA Club Racing license and must meet all Club Racing personal and vehicle safety requirements. A one race on-site complimentary license can be obtained using this process. The complimentary license will apply to the first race; a regular CR license will be necessary for any further races pending license review.
7. Non-BMW race cars requesting to race with Club Racing preferably should belong to another race series which shares a

similar racing philosophy (safety and car preservation) and rules (13/13 vintage rules) as Club Racing. They must present with an appropriate log book and a valid annual tech form. Chapters will petition the National Chairman for permission to allow non-BMW's to participate in a CR event. The National Chairman will issue Supplementary Regulations regarding the conduct of that event.

## **B. SPORT, PREPARED, SPEC E36, SPEC E30, SPEC MINI AND E30 M3 TOURING CLASSES**

### **1. General**

- a. Cars in these classes are to be factory-equipped vehicles as delivered to the general public through factory-authorized, United States BMW dealerships.

### **2. Approved Weights**

- a. All race cars in the Sport, Prepared, Spec E36, and E30 M3 Touring classes must meet or exceed the minimum weight as specified in Appendix D. The race cars may be weighed at any time during the event. A car found to be underweight after a practice or qualifying session must add ballast according to the ballast placement rules in order to meet the minimum weight requirement and may be penalized. The Tech Steward or Competition Steward will prohibit such a car from competing in blatant cases or, at a minimum, will require the race car to start the next race from the back of the grid. A race car found to be underweight after a race session will be disqualified from race results. A notation will be made on the current event page of the vehicle's logbook. The car shall be weighed at the next event and must meet minimum weight requirements before being allowed to compete. The Competition Steward may also apply other penalties under the 13/13 Rule.
- b. Current weight limits are based on published BMW NA or BMW AG weights, which are found in Appendix D, Vehicle Classification and Specification. (1) Vehicles of the same engineering designation (such as E36, E46), type (such as 325, 330, 318), configuration (such as two-door, four-door, all-wheel drive) and horsepower will be weight equalized to the lowest of the model year factory weights.
- c. Sport, Prepared, Spec E36, E30 M3 Touring and Spec E30 class race cars are measured with the driver and their personal safety gear in the vehicle and total weight must meet or exceed the allowed prepared weight published herein.
- d. **OFFICIAL SCALES:** the scales at the event are the official scales for the event. The scales will be open and available for drivers to weigh their cars prior to qualifying events. Open scale hours will be announced at the driver's meeting. Any car

that does not meet the minimum weight as published in the CR Rule Book will be deemed underweight.

The following scale configurations are acceptable: 1. Platform scales 2. Individual scales that weigh 1 axle (2 wheels) at a time or 3. 4 individual scale pads that each weighs a single wheel. If all 4 wheels cannot be weighed simultaneously, the driver must be weighed separately from the car.

If there is any doubt about the weight, the car must be weighed in both directions. A car that is underweight in impound will be reported to the Competition Steward; is subject to penalty, and the weight will be noted in the event page of the Vehicle Logbook. The car must be weighed by the Technical Steward before the next on-track session and must meet the proper minimum weight.

## 5. SPORT CLASSES

A. The **SPORT** classes provide an entry point for a club racer which accurately reflects typical track car modifications. The focus will be on safety, budget, and reliability. Updating or backdating is allowed provided the converted vehicle meets ALL specifications of the vehicle to which it is converted. Engine swaps are permitted. An engine from another model of the same chassis type may be installed; again, the converted vehicle must meet ALL specifications of the vehicle to which it is converted. The class of the converted car will be based on the new engine (factory –published horsepower for the new engine).

B. **Sport classes** are based on factory-published horsepower and weight. Sport class race cars are weighed with the driver and safety equipment in the car and total weight must meet or exceed the allowed prepared weight published herein.

C. Consumable items normally subject to wear and tear under street driving conditions such as belts, wiper blades, and filters may be replaced with replacement parts available from commercial retail sources.

### D. Engine

1. All component part numbers must be identical to those contained in the engine as delivered from the factory to the US market, except as noted in the rules below.

2. The engine must be as delivered from factory. Internal and external hardware (nuts, bolts, etc.) may be replaced with OE equivalent or better items performing the same fastening functions (for example, studs/nuts/washers replacing bolts). All hardware must be the same

size/diameter and weight as OE. No other modifications of any type are allowed after the air filter or before the exhaust port.

3. Air intakes, air filters, and air boxes may be replaced. Intake plenums must remain stock for the year and model car being raced (i.e. a 96 M3 cannot use a 95 M3/M50 intake plenum).

a. Vehicles with a design that houses both the mass air meter (for example, E46, E90) and the air box as a single integrated housing may change the housing, transferring the OE air flow meter to the new air box. Air Mass meters must remain stock.

4. The engine must run on the fuel type consistent with the original BMW factory engine design (either gasoline or diesel). Selection and mixing of commercially available leaded or unleaded fuel and octane ratings are free. Commercially available octane boosters are allowed. Ethanol (other than that normally added to gasoline available to the public), methanol, toluene, nitro methane, super oxygenated fuels, nitrous oxide, and/or custom-mixed fuels are not allowed.

5. Stock fuel injection for the chassis, model, and engine must be retained, except models sold in the US market with in both fuel injected and carbureted versions which are given the following allowances:

a. Mechanical fuel injection may be replaced with carburetors.

b. Carbureted cars may substitute up to maximum of 40 mm downdraft. Jets and emulsion tubes are free.

c. Modifications to the intake manifold to accept a 40 mm downdraft are allowed.

6. Engine management systems other than the stock DME are not allowed. Replacement performance chips for OBD-I and earlier formats, as well as software downloads for OBD-II format, are unrestricted with the following exceptions:

a. The remaining DME internal configuration must remain as stock and retain the correct model version identification and variant code.

b. External or "piggyback" devices such as the Split Second that either alter or modify sensor or metering signals into or out of the DME are prohibited.

c. Substitute engine management systems such as MOTEC, EFI, or any Alpha-N system are prohibited.

7. Exhaust system may be modified or substituted as follows:

a. Exhaust manifolds/headers must remain stock, as delivered from the factory to the US market for the year and model car as raced, except for newer model cars equipped with catalytic converters integral to the exhaust manifold which are subject to modification as detailed below.

b. Catalytic converters may be removed. In cars equipped with an exhaust manifold containing a catalytic converter, the exhaust manifold may be modified from the leading edge of the factory catalytic converter backward, and the converter removed.



- c. Exhaust configuration is free after the factory exhaust manifold/header and the exhaust must exit the bodywork only utilizing one or more of the factory exit locations.
- 8. Machining for balancing purposes only is allowed.
- 9. All pistons, including aftermarket replacements, must be factory replacement equivalent and match factory dome, dish, valve relief depth, ring groove placement and dimensions, weight and wrist pin height, etc.; compression must meet factory specifications.
  - a. The maximum allowable overbore is limited to the largest available factory replacement piston, not to exceed .020 inch (0.50 mm).
- 10. Hoses – Any hose or line passing through any part of a bulkhead or panel must be grommited to prevent abrasion or use an appropriate metal bulkhead fitting.
  - a. Hoses must be properly anchored to the body or panels at least every twenty-four inches using protective, cushioned line clamps or factory type line retainers.
  - b. SAE pressure safety factor will be a minimum 4 to 1 factor (if your engine develops a max oil pressure of 100 psi, use hose that has a minimum 400 psi working pressure)
  - c. Hoses shall be temperature-rated to a minimum of 300°F.
  - d. No slip-on or push-on connections are allowed except as supplied by the factory.
- 11. Accusumps and oiling system changes – Accusumps are permitted.
- 12. The oil pump and associated pick-up may be replaced with an OEM bolt-on replacement. Dual pick-up pumps are allowed for M50/M52/S50/S52 engines.
  - a. Dry sump systems are not permitted.
- 13. The oil pump shaft and sprocket may be altered or replaced for reliability as long as improved reliability is the only purpose and result of the alteration. The bolt may be safety-wired, or the shaft and sprocket may be replaced with aftermarket units that have improved attachments (for example, splined). The sprocket must remain the same size and have the same number of teeth as the original part.
- 14. Oil pan baffle and oil pan are free
- 15. Motor and transmission mounts may be replaced with aftermarket parts of any (including metallic) material, but must be the same height as stock for the model year and options of the vehicle.
- 16. Fittings and adaptors required to add supplementary gauges are free.
- 17. Spark plugs and spark plug/ignition wires are free. Coils and coil packs must remain stock.
- 18. Aftermarket water pumps that increase flow/efficiency and are of the same design type as stock are allowed.
- 19. Cruise control systems may be completely removed.
- 20. Emission control systems, in their entirety or in part, may be disabled and/or removed.

21. Harmonic Balancers are free as long as they meet OEM specifications.
22. Under drive pulleys may be substituted for OEM water pump pulleys and alternator pulleys.
23. Stock engine valves may be replaced by aftermarket valves as long as they retain the same dimensions and material as the stock factory parts. Keepers and retainers can also be replaced to accommodate such single groove valves.

## **E. Cooling System**

1. Any radiator may be used, providing it is mounted in the original location, maintains the same plane as the original core and requires no body or structure modifications to install. Screens of 0.25-inch minimum mesh may be mounted in front of the radiator and/or oil cooler and contained within the bodywork.
2. The mechanical (engine driven) cooling fan and fan clutch may be removed or replaced. Electrically operated puller or pusher fans with manual or automatic actuation may be fitted.
3. Cooling system hoses may be replaced by those of alternate materials.
4. Thermostats and thermostat housings may be replaced by units with an alternate operating temperature or material.
5. The coolant expansion tank may be replaced with an alternate BMW OE tank or a metallic tank of equivalent capacity and function of a BMW OE tank.
6. Engine, transmission, and differential oil coolers are free. Coolers must meet the following specific installation requirements:
  - a. All coolers mounted below the factory water radiator must be protected from debris intrusion with steel screening.
  - b. Additional, non-stock parts necessary to install oil coolers are permitted. Parts to attach engine oil coolers are limited to those that essentially maintain stock oil filter configurations.

## **F. Suspension**

1. Nonadjustable, single, or double-adjustable shocks/struts are allowed. Remote reservoir shocks/struts are prohibited. Rear shock absorbers that are originally equipped from their manufacturer with spherical bearings in their lower connection may be used.
2. Adjustable front camber plates/slotting to achieve suspension settings is allowed. Pick-up points cannot be welded or machined for adjustment purposes.
3. Rear camber adjustment is allowed.
  - a. Suspension components that control rear camber may be replaced with aftermarket components to provide this adjustment.
4. Height-adjustable front coil-over setups mounted in the original location are permitted.

5. Rear springs are free but must be mounted in the original location. Adjustable rear spring perches may be used to adjust ride height so long as they mount in the springs' original manner and location. Height-adjustable rear coil overs are allowed only in cars originally factory equipped with coil over rear suspensions.
6. Sway bar sizes, configurations, end links and end link connectors are free. Adjustable sway bars are allowed so long as they cannot be remotely adjusted or adjusted by the driver from inside the car.
7. Suspension bushing material is free.
  - a. Bushing material does not include replacement of bushings with spherical bearings or rod ends such as Heim ends except as noted below.
  - b. Solid bushings are allowed if fixed in place and allow rotation in a single plane or axis.
8. Spherical bearings are permitted in the following components.
  - a. Front upper strut mounts/camber plates.
  - b. Upper and lower rear shock mounts.
  - c. Rear lower control arms.
9. Devices with spherical bearings intended to maintain the linear alignment of the rear springs throughout their expansion/compression range are allowed.
10. Any bolt-in front strut tower brace is allowed. A bolt-in or welded-in rear shock/strut tower brace is permitted.
11. Additional welding of sway bar pick-up points and trailing arm pickup points for reinforcement and safety is allowed. Pick-up points must remain as per factory placement. Front sub-frame, motor mount areas, control arm pick-ups, rear lower control arms, idler arm, and steering box mounts can be strengthened for safety with additional welding.
12. For those cars that can accept them without modification to the chassis, the component, or the pickup points, E36 M3 front lower control arms are allowed.

## **G. Tires and Wheels**

1. Any DOT-approved, nationally marketed, generally available, "road race version" tire is allowed. "V" or higher speed-rated tires are required for all cars, except those for which "V" rated tires are not universally available. In all cases, the speed rating of the tire must be equal to or greater than the speed potential of the vehicle.
2. Rain tires – Any rain tire must be based on a DOT approved tire (for example, a grooved, DOT-approved Hoosier RS04 tire would be legal). Any other treaded tire permitted under Paragraph A may also be used as a rain tire. Requests for approval of any other rain tires must be submitted to the National Technical Steward.
3. Any tire used must be, or have been (for discontinued designs), readily available for purchase by all participants on an equal basis through typical retail market outlets.
4. Tire tread shaving is permitted.

5. Tread must have adequate rubber to ensure safely completing the full race session. Any tire deemed “unsafe” by the BMW CCA Club Racing Stewards will be disallowed and the car will be prohibited from participation until the problem is resolved to the approval of the Stewards.
6. Any wheel and DOT-approved tire combination in which the top of the tread section is fully covered by the factory bodywork when viewed from above is allowed.
7. Spacers may be used. Spacers must be hub centric, or hub extenders must be used.
8. Exterior fender and wheel openings shall remain unmodified. Inner fender lip rolling, flattening, or grinding at any wheel opening is allowed for tire clearance purposes, so long as the exterior profile remains unmodified. Fender flaring is prohibited, exception for 1600, 1800 and 2002 models which may use BMW OEM Turbo flares or aftermarket dimensionally equivalent flares.

#### **H. Brakes**

1. Brake calipers and caliper brackets must be of the same type and size as original for the year and model of the car. The exception is that cars with factory multi-piston calipers can change to factory single-piston calipers from the same chassis series.
2. Caliper mountings and bushings are free.
3. Brake rotors must be the same diameter and thickness as originally supplied on the car year and model as raced. Grooving and slotting of rotors is allowed.
4. Ducting of air to rotors is allowed. Removal, modification, or replacement of dust shields (backing plates) is allowed.
5. Brake pad material is free.
6. Brake fluid is free.
7. Rubber brake lines may be replaced with braided steel over Teflon.
8. The emergency brakes, mechanisms, and controls may be removed.

#### **I. Differential**

1. Ratio of the ring and pinion is free.
2. Non-factory limited slip of any type is allowed, including welding of the gears.
3. Differential mount bushings are free.
4. Finned, larger capacity differential covers may be used.

#### **J. Transmission/Flywheel Assembly**

1. A US-spec, BMW OE transmission, as originally equipped for the chassis, model, and year must be used.
  - a. No changes are permitted to the case or internals.
2. The shifter mechanism may be modified or replaced.
3. Flywheel assemblies, including clutch related items, must retain stock configuration and weight.

4. Clutch and pressure plate shall have the same weight and have the same size and number of clutch disk(s) as originally equipped for the chassis, model, and year. Aftermarket replacements are allowed but must be otherwise identical to the stock configuration and weight.
5. To summarize, Sport Class must run the OEM BMW transmission for that chassis (or converted chassis) with no internal changes in gear type or design.

#### **K. Body/Chassis/Interior**

1. Chassis/body must be the same material as supplied by the factory.
2. Any body repair or reinforcement must follow that as described in the factory authorized repair manual or bulletins.
3. Ducting of air to rotors and engine – Fog lights/covers may be removed to facilitate ducting of air to brake rotors and engine.
4. Fog lights may be removed and replaced with blanking plates.
5. Headlight removal is not permitted.
6. Seats are free subject to the safety guidelines contained in the Safety section of these rules.
7. Steering wheels and shift knobs are free. Quick-release steering wheel attachments are allowed. Steering locks must be disabled.
8. Aftermarket front one-piece bumper/air dam units are allowed, provided the original crash bar or one of equal integrity is maintained OR the assembly is otherwise reinforced to equal strength as the original assembly.
  - a. The material composition of the aftermarket unit is unrestricted.
  - b. Stock factory appearance for a variation of the specific chassis code must be retained (i.e. E36 325 may use an M3 bumper cover, but may not use an E46 M3-look cover or any other aftermarket body kit. Likewise, an E30 325i may use an E30 M3 front bumper support and cover).
9. Aerodynamic Devices
  - a. Front Splitters, Spoilers, and Air Dams - Aerodynamic parts allowed on the front of the car are limited to only those that came as factory standard for US market cars, excluding special production models, for the given chassis code being raced (i.e. An E36 325 can use an E36 M3 factory chin lip when using the M3 front bumper, but neither the E36 325 or E36 M3 may use the E36 M3 Lightweight splitter assembly. Likewise, no E30 can use E30 M3 Evo parts)
  - b. Rear Spoilers, Wings, and Diffusers – Aerodynamic parts allowed on the rear of the car are limited to unmodified profiles of only those parts that came as factory standard for US market cars, excluding special production models, for the given year and model being raced (i.e. An E30 M3 may use the stock US-model rear wing, An E30 325i may not use an E30 M3 wing due to the modification required for fitment, and an E36

M3 may not use any rear wing/spoiler as all versions were either from special production models (M3 LTW) or dealer-installed options)

10. Modifications to the underside of the vehicle for the purpose of improving aerodynamics are not allowed (for example, diffusers). Any aerodynamic pieces originally factory-installed on the year and model of car as raced are permitted.

11. Interior may be removed, except dash and door panels, providing the car “conforms to the spirit” of the BMW CCA Club Racing Program (that is, it is aesthetically pleasing). The “interior” is defined to include carpeting, seats, headliner, sound-deadening materials, trim panels, trunk trim, console, radio, entertainment and navigation systems, speakers, sun visors, door mechanisms, and the sunroof mechanism.

a. The OE driver and passenger door panels may be replaced with a metallic panel with a minimum thickness of .060 inch or a comparable panel constructed of plastic or composite material, securely attached to the door.

b. Window glass and window actuator mechanisms may be altered or removed.

c. The dash must be intact but anything attached to it (vents, glove box, airbag cover (where appropriate), etc.) may be removed.

d. If the sunroof mechanism is removed, the panel must either be securely sealed (bolted/welded/bonded) or secured in place with two retaining straps one inch wide and extending three inches beyond the sunroof opening on each side. The panel must be flush with the roofline.

(1) The sunroof panel may be replaced by an alternate panel of metallic or composite material.

e. In cars with a sunroof cassette the entire cassette may be removed.

12. Any door adjacent to a seat equipped with seat belts or harness must be capable of being opened from both inside and outside the car.

13. Wiring to components that may be removed according to the rules may also be removed.

14. Fuses and relays for unused components may be removed.

15. All heating and air conditioning components may be removed.

16. Ducting to provide airflow to additional coolers (transmission, oil, and differential) is permitted.

17. Windshield washer fluid reservoir, pump, fluid lines, and nozzles may be removed.

18. The steering column may be mounted to the optional roll cage front cross bar (A to B as indicated on the Roll Cage Diagram), if installed.

19. Spare tire, tools, and associated assemblies may be removed.

20. The interior mirror may be replaced with any interior mirror meeting or exceeding the visibility of the factory part.

21. The battery size, type, chemistry, and weight are free, but must be 12-volt. Additional battery hold-downs are encouraged. Batteries must remain in their original location except for 2002 and E21 cars. E30 cars in which the battery was originally in the engine compartment may relocate the battery to the standard E30 trunk location.
22. E36 chassis vehicles may use BMW part 51 71 8 410 212, x-brace.
23. Engine under tray (single or multiple sectioned) may be replaced in its entirety with an aftermarket piece(s) that matches the form, fit, and function of the original piece(s).
24. Fuel filler restrictors may be removed from the fuel filler neck.
25. Fender well liners may be removed.
26. All E30 chassis cars may use the factory E30 convertible front reinforcements.

## **L. Fuel System**

1. Fuel cells may be used. If a fuel cell is used, the stock tank may be retained or replaced. If retained, only one of either the fuel cell or stock tank may provide fuel for combustion. In such cases the remaining storage source (cell or tank) must be empty of any and all substances, except that the fuel cell may retain the bladder and foam.
2. All safety fuel cells shall be constructed and certified in accordance with FIA FT-3 specifications. All safety fuel cells shall consist of a foam-filled fuel bladder enclosed in a metal container at a minimum.
  - a. At a minimum, all fuel bladders shall be constructed in accordance with the FIA FT-3 or higher (FT-3.5, FT-5, etc.) specifications. Foam internal baffling is required.
  - b. The bladder shall be installed in a container of .036-inch steel, .059-inch aluminum, or .125-inch Marlex, fully surrounding the bladder.
  - c. Fuel cell bladders require recertification by the manufacturer after five years. Only one recertification good for two years is permitted, giving bladders a seven-year total life after which they must be replaced.
3. Fuel cells shall be located within twelve inches of the original fuel tank location, except in models where the original fuel tank is located beneath the rear seats, in which case the cell must be mounted in the trunk. Additional reinforcement may be added to support the fuel cell, but such reinforcement shall not be attached to the roll cage in Sport and Prepared classes. The floor pan may be modified for installation but not for aerodynamic benefit. There shall be a sealed metal bulkhead between the driver/passenger compartment and the compartment containing the fuel cell.
4. For cars in which the factory stock tank is non-metallic, all factory-installed heat shields must remain intact.
5. A second fuel pump is allowed.

6. A mechanical fuel pump may be replaced with an electrical fuel pump provided that it is wired so that it is controlled by the ignition system, to ensure shut down in the case of an accident requiring electrical cut-off.

#### **M. Data Acquisition**

1. Additional data acquisition devices, including gauges, are permitted in Sport Classes, as long as the driver is not able to adjust any setting on the vehicle at any time while the car is in motion. These devices are to be used for information gathering **ONLY**.

a. The OE gauge panel (Instrument Cluster) must remain in place.

b. Additional devices may be located anywhere within the cockpit, including in front of the stock gauges.

## **6. PREPARED CLASSES**

A. **PREPARED** classes allow participation with a higher level of modification than the Sport classes, but remain in keeping with the spirit of the “original” vehicle. All Sport class improvements are also allowed in Prepared classes.

B. **Prepared classes** are based on the stock class of the chassis and model; for example, a chassis/model classed as a “J” class car in Sport will be a “J” class car in Prepared class.

C. Prepared class race cars are weighed with the driver and safety equipment in the car and total weight must meet or exceed the allowed prepared weight published herein.

D. Allowed modifications in addition to those allowed in Sport Classes:

#### **E. Engine**

1. Intake system:

a. Four-cylinder engines originally equipped with carburetion are permitted two carburetors. Engines with six or more cylinders that were originally equipped with carburetion are permitted three carburetors.

b. Carburetion in excess of the limits of Section 6.E.1.a above will result in the car being moved up one class. Modifications or changes to the intake manifold to accept additional carburetor(s) are allowed.

c. Throttle bodies, including the connector between the plenum and the throttle body, are free but must remain in original configuration (for example, multiple throttle bodies may not be substituted for a single throttle body).



- d. Intake plenums may be swapped, but must be OE BMW from the chassis generation being used (A 96 M3 can use a 95 M3 M50 plenum, but an E46 325 with an M54 engine cannot backdate to an M50 plenum).
  - e. Fuel injection air-metering devices must remain in the stock configuration and operation. Alternate air flow meters (AFM) and mass airflow meters (MAF) that retain the same metering method (air flap, hot wire, or hot film) may be used, but an AFM may not be substituted for a MAF or vice versa. The wiring and connector for the air-metering device may be altered to allow the use of an alternate legal air-metering device.
- 2. Camshaft lift and duration may be changed from stock. Cam gears, Vanos shims, and valve seats and springs are free. Alternate valve retainers of the same material as stock and equal or heavier weight than stock are allowed. Cam timing is free.
  - 3. Non-OE ignition boxes are allowed for distributor-based engines (i.e. MSD box).
  - 4. OBDII-equipped cars may retrofit engine electronics to the pre-OBDII factory system that was available on models with the same engine type. Likewise vehicles originally equipped with OBDI engines may use an engine from an OBDII car and keep the original electronics to the receiving chassis (for example, E36 325 receiving an M52B28 motor and retaining the original OBDI chassis electronics).
  - 5. Engine management systems other than the stock ECU are not allowed. ECU software is free so long as the ECU configuration remains stock. Devices that alter, condition, or otherwise modify the inputs to the ECU or the signals from the ECU are prohibited. Alpha-N programming and DTA, Motec, EFI, Split Second, and all other replacement or “piggyback” engine management systems are prohibited.
  - 6. All pistons must be factory replacement equivalent and match factory dome, dish, valve relief depth, ring groove placement, weight, and wrist pin height, etc. Compression must meet factory specifications. The maximum allowable overbore is limited to the largest available factory replacement piston, not to exceed .040 inch (1.00 mm). The compression ratio may be changed only within the tolerances affected by resurfacing for trueness and must be within factory tolerances.
  - 7. Fuel injectors are free.
  - 8. Exhaust headers are free.
  - 9. Engine Swaps
    - a. An “Engine Swap” occurs when a car receives an engine that is different from the one it contained when delivered from the factory. The engine being installed must have been available from the factory in the US market for the chassis/variant and body style and exterior contour it is being installed into. The converted vehicle must comply ALL

specifications of the vehicle to which it is converted including exterior body style.

b. The class of an engine swap car will be based upon the engine.

c. An engine swap car must use the transmission associated with either the donor engine or chassis; no other transmission is allowed. No modification to the transmission or bell housing is allowed.

d. Use of an unmodified alternate factory driveshaft or modified stock drive shaft to facilitate the installation is allowed. The stock driveshaft is defined as that which came from the receiving chassis. No modifications to the driveshaft that are not specifically required for the installation are allowed. The driveshaft configuration may not be changed. The driveshaft material must be as stock.

e. No other driveline modifications are allowed beyond those specifically allowed in the Prepared class.

f. The weight of an engine swap car must meet the greater of:

(1) The weight required for the original configuration of the car as delivered from the factory.

(2) The weight required for the new configuration of the car based on the engine donor chassis.

(3) The weight of the heaviest version of that chassis in its class (for example, an E36 318 or 325 chassis receiving a 2.8-liter motor must weigh as much as an E36 328).

#### 10. E36 Chassis Swaps

a. An "E36 Chassis Swap" occurs when a motor and transmission from an E36 standard variant (not E36/7 Z3) is placed within an E36 chassis that is different from the one it was placed in when delivered from the factory.

b. The class of the chassis swap car will be based upon the engine.

c. A chassis swap car may update/backdate with chassis-specific components, including using "M" model components, such as suspension or sub-frame.

d. The weight of a chassis swap car must meet the greater of:

(1) The weight required for the original configuration of the car as delivered from the factory.

(2) The weight required for the new configuration of the car based on the donor chassis.

(3) The weight of the heaviest version of that chassis in its class (for example, a car with an M52B28 engine installed in an E36 318 or 325 chassis receiving must weigh as much as an E36 328).

11. Oil filter housings may be replaced with alternate or aftermarket oil filter housings or oil distribution blocks. Remote oil filters may be used

with alternate or aftermarket oil distribution blocks that do not incorporate an oil filter housing.

12. The power steering reservoir may be replaced and associated lines may be replaced with braided steel lines using AN fittings.

## **F. Suspension**

1. Upgrading to suspension components from “M” series chassis within the E36 chassis family (that is, E36M3 to E36) is allowed.
2. Vehicles with stock four-lug hubs may be upgraded to BMW five-lug hubs.
3. Quicker-ratio units for steering boxes or rack and pinion steering assemblies may be used provided they are BMW components.

## **G. Brakes**

1. Rotors are free (except carbon rotors are not allowed).
2. Calipers are free with the following limitations: four-piston maximum, two-piece design, one caliper per wheel.
3. The number of master cylinders must be as supplied by the factory, except that early production cars (such as the 1600, 1800, and 2002) may update to a tandem master cylinder for the safety of the dual-circuit system.
4. Master cylinders may be modified or replaced to increase volumetric flow; however the unmodified stock fluid reservoir and brake booster must be retained.
5. Brake Drums are free (for example, 1600/2002 and 320 models).
6. Upgrading to “M” specific components is allowed on all non-“M” cars of the same generation (i.e., E36 325 may use E36 M3-fitment brake parts but not E46 M3-specific parts unless otherwise categorically allowed above).

## **H. Transmission/Flywheel Assembly**

1. The flywheel is free except that it must be constructed of ferrous material and/or aluminum.
2. The clutch disk may be lightened or replaced with alternate materials.
  - a. The clutch disk shall be the same diameter and number of clutch disk(s) as originally equipped for the chassis, model, and year.
3. The pressure plate may be replaced but shall use the original equipment mounting holes.
4. Reminder, Prepared Class must run the OEM BMW transmission for that chassis (converted chassis) with no internal changes in gear type or design).

## **I. Body/Chassis/Interior**

1. Openings in the front air dam/bumper cover to provide for ducting to additional coolers (oil, transmission, and differential) are permitted.

2. Rear spoilers and wings are free providing they do not exceed maximum body width, are no higher than the roofline and do not extend more than two inches past the farthest part of the rear bumper as viewed from above the car.

a. Vehicles with a roofline that extends to the rear for the full extent of the body may have these devices extend no more than three inches above the roofline.

3. Front splitters are free providing they do not exceed maximum body width, do not extend rearwards past the front axle centerline, do not extend more than three inches past the farthest part of the front spoiler or bumper as viewed from above, and follow the general outline of the spoiler.

a. Installed devices must be consistent with the spirit of the original design of the car such as those presented by aftermarket sources.

b. Dive plates are allowed.

A. No aerodynamic device may be installed that has the capability of being controlled, altered, or adjusted by the driver or by any other means while the car is in motion.

5. Front windshields may be replaced with polycarbonate of minimum 6 mm thickness.

a. Front windshield retaining clips or straps are required for non-glass windshields.

(1) A minimum of four exterior retaining clips (two top and two bottom) or two exterior retaining straps and two interior windshield supporting bars are required.

b. If an edge of a polycarbonate windshield is not accessible for measurement, a 0.125-inch diameter inspection hole must be drilled near a bottom corner of polycarbonate windshields to allow confirmation of thickness.

#### J. Data Acquisition

1. The stock gauge panel (Instrument Cluster) may be removed in whole or in part.

## 7. MODIFIED and SUPER MODIFIED CLASSES

A. **MODIFIED** classes are for race cars with a still higher level of modification than the Prepared Classes and require use of a BMW engine. All Sport and Prepared class improvements are also allowed in the Modified classes. Class for competition will be based on engine displacement.

B. **SUPER MODIFIED** class is intended for race cars where the modifications exceed those allowed in the Modified classes and, additionally, for those designated non-BMW purpose-built chassis, BMW-powered race cars that meet

the eligibility criteria (Chevron, DP). All Modified Class improvements are also allowed in Super Modified class.

C. Allowed modifications in addition to those allowed in Sport and Prepared classes:

D. Metallic treatments are permitted (for example, plating, and/ or coating).

#### **E. Engine**

1. The car must retain a BMW OE engine block and head. Schnitzer heads are allowed on M10 engines. All other changes, relocations, substitutions, alterations, and modifications are free. Fuel type restrictions listed in the Sport class section remain in place.
2. Engine/drive train configuration must remain as stock. Front engine rear drive cars may not relocate the engine to the rear, etc.
3. Turbocharging/Supercharging – For the purpose of class determination, engines with turbo charging or supercharging shall have the actual engine displacement increased by a factor of 1.5 (150%), regardless of boost level.
4. Dry sump oiling systems are allowed.
  - a. The oil tank(s), cap(s), oil filter(s), and any fittings attached thereto shall be isolated by a metal bulkhead(s), so that in the event of any spillage, leakage, or failure, oil will not reach the driver.
5. Exhaust is free, including side-exit.

#### **F. Suspension**

1. Free.
  - a. Cockpit adjustability of any suspension component is allowed only in Super Modified.

#### **G. Data Acquisition**

1. Free.

#### **H. Tires and Wheels**

1. Any tire and wheel combination meeting the safety requirements of the BMW CCA Club Racing Program technical inspectors is allowed.
2. Any tire used must be, or have been (for discontinued designs), readily available for purchase by all participants on an equal basis through typical retail market outlets.
3. Tire and wheel packages must be completely covered by the bodywork and have sufficient clearance to prevent rubbing that could be considered dangerous.
4. Non-DOT-approved race tires ("slicks"), including rain tires, are allowed.

#### **I. Brakes**

1. Brakes are free. Non-metallic rotors are allowed only in Super Modified. Cockpit-adjustable brake biasing is allowed.
2. Brake lights are required and must be as bright and as easily seen as stock brake lights.

#### **J. Differential**

1. Free.

#### **K. Steering**

1. Free.

#### **L. Transmission Assembly**

1. Modified cars and Super Modified cars may use any BMW OE transmission from any chassis or non-OEM transmissions, sequential gear boxes, dog-ring gear changes or any other internal changes in gear type or design.
2. Flywheel lightening or replacement is allowed. Modified cars must use a ferrous and/or aluminum flywheel. The flywheel is free in Super Modified.
3. Clutch, pressure plate, and actuating mechanisms are free.

#### **M. Drive Shaft**

1. The drive shaft of Modified class cars must be constructed of the same materials as the stock drive shaft. In Super Modified, the drive shaft material is free.

#### **N. Body, Chassis, Interior and Windows**

1. Fenders may be flared or boxed to cover wheels and tires.
2. Doors, fenders, hood, bumpers, side skirts, rear fascia, and deck lids may be replaced with parts of alternate material(s) and design, provided that their shape maintains the recognizable external features of the standard BMW automobile.
3. Cutting of non-stock openings and removal of headlights is allowed. Ducting for any purpose is allowed.
4. Windows:
  - a. Front windshield can be replaced as outlined in Prepared.
  - b. Front side windows may be removed. Rear side and rear windows can be replaced with alternate material.
  - c. Vent holes are permitted in polycarbonate windows.
5. Removal of interior is allowed providing the car "conforms to the spirit" of the BMW CCA Club Racing Program (that is, it is aesthetically pleasing).
6. Partial tube-frame construction is allowed. Construction must be based upon factory chassis. VINs on the cowl and doorframe must be in place, or the door sill tag must be intact if originally supplied. The A, B,

and C pillars must be OE both in angles, length, and location. Roof must be OE. OE rocker panels must be used.

7. Non-critical sheet metal (spare tire wells, etc) may be removed. Removal may not be primarily intended to provide aerodynamic benefit, except between the front of the car and the front axles, and between the rear of the car and the rear axles. Any sound deadening or insulation may be removed, except as required around a stock fuel tank when it is retained.

8. Body seams may be fully welded or stitch welded.

9. Batteries are free, and may be replaced and located anywhere in the chassis. Wet-cell batteries located in the passenger compartment must be contained in a marine-style box.

10. The moveable sunroof panel may be replaced by a panel of any metallic or composite material.

11. Chassis that have alternate OE roof panels may use any of the OE panels or exact replicas. The roof must be installed according to factory specifications.

a. Non-OE roof panels are permitted in Super Modified.

12. Underbody aerodynamic aids, other than those stock to the model and chassis, are not permitted between the front and rear axles. Under trays are allowed between the front of the car and the front axles, and rear diffusers/ venturi devices are allowed between the rear axle and the rear of the car. Rear underbody aerodynamics must terminate no further back than one inch past the rear of the stock bumper location as viewed from above. If under-car fuel tanks have been removed, a panel that duplicates the bottom profile of the stock tanks may be attached. These panels must not extend past the location of the stock tanks more than a small amount required to affix the panels.

13. Splitters are free, provided they do not exceed maximum body width, extend no further forward than four inches from the stock front bumper as viewed from above, and are subject to the underbody aerodynamics restrictions.

14. Wings are free, provided they do not exceed maximum body width, are no higher than a line parallel to the ground at the highest point of the roofline, and extend no further than 16 inches behind the rear bumper as viewed from above. Vortex or velocity generators that do not violate these restrictions are permitted.

a. Vehicles with a roofline that extends to the rear for the full extent of the body may have these devices extend no more than three inches above the roofline.

15. All wiring is free provided required components (such as brake lights) function as required.

16. External mirrors may be replaced.

## **O. Fuel Cells**

1. Modified and Super Modified class cars must have a fuel cell, except for cars where the factory stock fuel tank is located forward of the rear

axle (for example, E21, E30, E36, and E46 chassis), in which case the stock fuel tanks may be used.

## 8. SPEC E36™ CLASS

- A. The Spec E36™ class is designed to specify a set of E36 chassis, six-cylinder race cars that are prepared to a uniform level. The modifications required or allowed are intended to produce a fun, fast race car that feels like a race car, yet remains relatively inexpensive to prepare and maintain.
- B. BMW CCA Club Racing may, from time to time, make adjustments to these specifications in order to balance competition.
- C. **WARNING:** Spec E36 is a class dedicated to competition between drivers, not their ability to prepare a car. Any modifications not specifically listed within the class rules are not allowed. Any variances found at the track will result in severe penalties as allowed. Any rules loopholes will be closed quickly. This is not a class in which to exploit the rules; strict adherence to the rules is expected without exception.
- D. Spec E36 is a trademark of the BMW Car Club of America.
- E. Specific rules for Spec E36 are available on the BMW CCA Club Racing website under the section “General Information> for the racer”. <http://www.bmwccaclubracing.com/SpecE36>



## 9. E30 M3 TOURING CAR CLASS

- F. The E30 M3 Touring Car Class recognizes the special status that the E30 M3 has in Group A and N Touring Car history, being the most successful chassis ever, and its significance in launching the lineage of BMW's mass production M cars. This class is for BMW CCA Club Racers wishing to build a true race car in the spirit of the early Group A and Group N E30 M3 race cars. The focus of the E30 M3 Touring Car Class is on race car handling, with tightly limited engine modifications.
- G. The E30 M3 Touring Car Class is open only to E30 M3 chassis race cars that are prepared to a strict set of guidelines. The modifications permitted are intended to produce a fun, fast club-level race car that feels like a pro-level race car, allows the driver and crew to adjust its handling like a pro race car, yet remains relatively inexpensive to prepare and maintain. E30 M3 Touring Car Class race cars are weighed with the driver and all personal safety gear in the vehicle. Total weight must meet or exceed the minimum permitted E30 M3 Touring Car Class weight published herein. All requirements from the General and Safety sections of this rulebook must be followed. E30 M3 owners who wish to prepare their cars for those classes to which the E30 M3 is normally assigned, may still do so. It is not mandatory that racers classify their E30 M3's in the E30 M3 Touring Car Class.
- H. E30 M3 Touring Car Class rules stand alone and do not use allowances from the Sport or Prepared classes unless specifically noted herein. Roll cages must meet the requirements specified for the Prepared classes. All references to "stock" and "factory" refer to the U.S. specification E30 M3, unless used specifically in the context of the EVO II and EVO III versions of the E30 M3.
- I. The BMW CCA Club Racing Stewards reserve the right to test any car for conformance at any time. Consumable items normally subject to wear and tear under street driving conditions such as belts, wiper blades, and filters may be replaced with OE-equivalent aftermarket replacement parts (which do not offer any performance advantage) available from commercial retail sources.
- J. Cryogenic treatment and aftermarket coatings of any part or component are permitted.
- K. **Engine**

1. All component part numbers must be identical to those contained in the engine as delivered from the factory. The engine must be as delivered from the factory, except as noted in the rules below. Internal and external hardware (nuts, bolts, etc) may be replaced with OE equivalent or better items of the same weight and performing the same fastening functions (for example, studs/nuts/washers replacing bolts). All hardware must be the same size, diameter as OE. No other modifications of any type are permitted after the air filter or before the exhaust port, except as noted in the rules below.
2. Stock factory specification pistons or factory EVO II specification pistons for the 2.3-liter S14 engine are permitted. Compression ratio shall not exceed 11.0:1. Aftermarket pistons are permitted, but must match factory dome, dish, valve relief depth, ring groove placement, skirt, and wrist pin height for either U.S. E30 M3 factory OE pistons or factory E30 M3 EVO II pistons. Compression must meet factory replacement specifications, and may be changed only within the tolerances affected by resurfacing for trueness. The maximum allowable overbore is limited to .040 inch. Aftermarket ferrous rods no lighter than 560 grams (including rod bolts, excluding rod bearings) are allowed.
3. Camshafts may be changed from stock to BMW factory or any aftermarket camshafts provided they do not exceed the lift/duration specifications of 11.5 mm/284 degrees intake and 11.3 mm/276 degrees exhaust camshafts, respectively. Valve springs are free. Alternate valve retainers of the same material as stock and equal or heavier weight than stock are permitted. Any BMW factory cam gear or an exact replica of a BMW factory cam gear may be used. Adjustable cam gears are permitted. No other internal engine changes, including cylinder head porting and/or polishing of any kind, are permitted.
4. The stock air box and intake must be retained. The air filter panel is free. The ducting before the air filter housing, including the lower air box, donut, and snorkel, is free.
5. Stock fuel injection, including fuel injectors, for the chassis, model, and engine must be retained.
6. Engine management systems other than the stock ECU are not permitted. ECU programming (contained exclusively on a single integrated circuit central processing unit, commonly called a chip) is free so long as the ECU remains stock in every other way. Devices that alter condition or otherwise modify the inputs to the ECU or the signals from the ECU are prohibited. Alpha-N programming and DTA, Motec, EFI, Split Second, and all other replacement or "piggyback" engine management systems are prohibited.

7. Exhaust systems are free after the stock S14 header, which must remain. Catalytic converters, resonators, and mufflers may be removed or replaced. The exhaust must exit from under the car in the stock location. The car must meet the BMW CCA Club Racing sound limits, and the local limits of any track or event.
8. Machining for balancing purposes only is permitted and must be within factory tolerances.
9. Factory or aftermarket metallic thermostat housings are permitted. Aftermarket engine-driven water pumps that directly replace the OE pump are permitted.
10. Engine oil coolers are free. Coolers must meet the following specific installation requirements:
  - a. All coolers mounted below the factory water radiator must be protected from debris intrusion with steel screening.
  - b. Additional plumbing is permitted for engine oil coolers, but the oil filter must remain in the stock location.
11. Accusumps are permitted.
12. Oil pan baffle and oil pan are free.
13. Motor and transmission mounts may be replaced with aftermarket parts of alternate material, but must be the same height as stock. Aftermarket transmission mount stiffening devices are permitted.
14. Radiators are free provided they are mounted in the same plane as the factory radiator. Cooling system hoses may be replaced by those made of alternate materials. Plastic shrouds above and behind the radiator may be removed.
15. The mechanical (engine-driven) cooling fan may be removed or replaced with an electrical fan using manual or automatic switching.
16. Spark plugs and plug wires are free. Ignition systems must remain stock. Coil must be as supplied by the factory.
17. An electrical cut-off switch, as defined in the Safety Section, is required.
18. Fuel type restrictions are the same as those listed in the Stock class section.
19. Under drive pulleys are permitted.
20. Power steering pump may be removed and stock steering rack may be plugged to convert to manual steering.
21. Adjustable fuel pressure regulators are permitted.

22. Cruise control systems may be removed or disabled.
23. The 2.5-liter S14 engine may be used as a substitute for the 2.3-liter S14 engine. The stroke is limited to 87 mm and the bore is limited to 95mm. The engine must be compliant with all other existing rules for the 2.3-liter M3T engine. Vehicles using the 2.5-liter S14 engine will have an additional 100 lbs. weight penalty. Vehicles will need to indicate the additional weight penalty with a "100 +" decal on the right lower corner of the windshield.
24. M3T S14 engines may be prepared with a 2.0 liter crank and appropriate rods/pistons. The engine must be compliant with all other existing rules for the 2.3-liter M3T engine. Vehicles may run up to 100 lbs. under the listed prepared weight (100- decal on the right lower corner of the windshield).

#### **L. Suspension**

1. Adjustable front camber plates and/or slotting to achieve suspension settings is/are permitted. Pick-up points cannot be welded or machined for adjustment purposes.
2. Rear camber and/or toe adjustment is permitted. Suspension bushings may be replaced with eccentric versions and rear sub-frame can be modified with slots that allow rear camber adjustment.
3. Height-adjustable front coil-over setups mounted in the original location are permitted.
4. Rear springs are free but must be mounted in the original location. Adjustable rear spring perches may be used to adjust ride height so long as they mount in the springs' original manner and location.
5. Shocks/struts must use the car's factory stock pick-up points. Non-adjustable, or single- or double-adjustable (compression and rebound only) shocks/struts are permitted. Shocks/struts that allow user changes in gas pressurization are prohibited (remote reservoir or otherwise).
  - a. Suspension bushing material is free. Bushing material does not include replacement of bushings with spherical bearings or rod ends such as Heim ends except as noted in G.6 and 7 below.
  - b. Solid bushings are allowed if fixed in place and allow rotation in a single plane or axis.
6. Spherical bearings are permitted in the following components.
  - a. Front upper strut mounts.

- b. Upper and lower rear shock mounts.
  - c. Rear lower control arms.
  - d. Camber plates.
- 7. Sway bar link connectors are free.
- 8. Springs and spring rates are free.
- 9. Sway bars are free, but must use stock mounting locations and cannot be remotely adjustable or adjustable by the driver inside the cockpit.
- 10. Any bolt-in shock tower brace is allowed. Welded-in rear shock tower braces are allowed.
- 11. Adjustable “bump steer” correction kits are free.
- 12. Reinforcement of sub-frame and sway bar pickup points for safety purposes is permitted and strongly recommended.
- 13. Aftermarket replacement front lower control arms are allowed provided they do not alter geometry and are made of similar material as the OEM control arms.

#### **M. Tires and Wheels**

- 1. Any wheel and DOT-approved tire combination that fits under the fenders is permitted. “V” or higher speed-rated tires are required.
- 2. Any tire must be, or have been (for discontinued designs), readily available for purchase by all participants on an equal basis through typical retail market outlets.
- 3. Any rain tire must be based on a DOT-approved tire, including custom grooved tires based on an otherwise DOT approved tire. Any other treaded tire permitted under Paragraph A may also be used as a rain tire. Requests for approval of any other rain tires must be submitted to the National Technical Steward. Hoosier Dirt Stockers are not permitted.
- 4. Tread must have adequate rubber to ensure safely completing the full race session. Tire tread shaving is permitted.
- 5. Any tire deemed unsafe by the BMW CCA Club Racing Stewards will be not be permitted and the car will be prohibited from participation until the problem is resolved to the satisfaction of the Stewards.
- 6. Wheel width and offset is free.

7. Wheel type and style is free providing the wheel meets or exceeds factory safety specs. Spacers may be used to allow wheels with offset differences. Spacers must be hub centric, or hub extenders must be used.
8. Fender and wheel openings shall remain unmodified except that rolling under, flattening or grinding any interior lip on a wheel opening is permitted for tire clearance purposes. Fender flaring is prohibited.
9. Wheel bolts may be replaced with studs.

#### **N. Brakes**

1. Brake pad material is free.
2. Rotors are free, but must be one-piece or fixed two-piece (carbon rotors are not permitted). The rotors must fit within wheels that comply with paragraph H, above.
3. Calipers must be BMW OEM single-piston sliding design (from any model). Only one caliper per wheel is permitted.
4. The number of master cylinders must be as supplied by the factory.
5. Master cylinders may be modified to increase volumetric flow.
6. Cockpit-adjustable brake bias control is not permitted.
7. Caliper mountings and bushings are free.
8. Ducting of air to front rotors is permitted. The addition of duct plates to the front hub or strut is permitted.
9. Removal or modification of dust shields is permitted. Alternate dust shields (to allow ducting) are permitted.
10. Brake fluid is free.
11. Flexible brake lines may be replaced with braided steel over Teflon lines, and are strongly recommended.
12. Emergency brakes, mechanisms, and controls may be removed.

#### **O. Differential**

1. Ratio of the ring and pinion is free.
2. Non-factory limited slip of any type is permitted, including welding of the gears and/or modification of lockup characteristics including ramp angles and lockup percentages.
3. Differential coolers are free. Finned, larger capacity differential covers may be used.

4. Differential mount bushings are free.

**P. Transmission/Flywheel Assembly**

1. A BMW OE transmission as originally equipped for the U.S. or European market, or factory alternate transmission designed for the chassis/engine/model/year must be used. No alternate gear ratios or changes to the case or internals are permitted.
2. The flywheel is free except that it must be constructed of ferrous material and/or aluminum.
3. The clutch may be lightened or replaced with one made from alternate materials. The clutch and pressure plate shall be the same size and number of clutch disk(s) as originally equipped for the chassis, model, and year. Lightweight pressure plates are permitted.
4. Shifter mechanisms may be modified or replaced.

**Q. Body/Chassis/Interior**

1. Chassis/body, with the exception of spoilers and wings, must be the same material as supplied by the factory. E30 M3 EVO III front fenders are NOT permitted. Grp A exterior mirrors are not permitted.
2. Any body repair or reinforcement must follow procedures as described in the factory authorized repair manual or bulletins.
3. Factory E30 convertible frame reinforcements are permitted.
4. Ducting of air to rotors – Fog lights/covers may be removed to facilitate ducting of air to front brake rotors, coolers, and engine. The headlight units must remain in place and be functional. Protective headlight covers are permitted.
5. The driver's seat may be any racing seat that meets BMW CCA Club Racing safety standards. The passenger seat may be removed. Rear seats must be removed.
6. Any ballast to meet weight must be placed entirely in the passenger side front and/or rear floor area and/or the spare tire well in the trunk, and must be securely bolted to the chassis. Each segment of ballast shall be fastened with a minimum of two bolts (metric M12/Grade 10.9 or SAE ½-inch/Grade 8 or higher) and corresponding positive lock nuts, and shall utilize large diameter, load-distributing washers.
7. Steering wheels and shift knobs are free. Quick-release steering wheel attachments are permitted. It is recommended that steering locks be disabled.

8. Front Spoilers/Splitters and Wings must be as originally equipped for the E30 M3 model, including the EVO II and III series, or aftermarket units that are identical to factory EVO II and EVO III parts in terms of shape, height, or adjustability. Aftermarket front, one-piece replica bumper/air dam units are permitted provided the original crash bar or one of equal integrity is maintained or the assembly is otherwise reinforced to equal strength as the original assembly. No other aerodynamic devices may be installed.
9. Modifications to the underside of the vehicle for the purpose of improving aerodynamics are not permitted.
10. The interior, except for the dash, may be removed. The "interior" is defined to include carpeting, seats, headliner, sound-deadening materials, trim panels, trunk trim, door panels, console, glove box, rear package shelf, entertainment and navigation systems, speakers, sun visors, central locking system, door lock and window mechanisms, and the sunroof mechanism. If the sunroof mechanism is removed, the OE panel, or a replacement of like material or metal, must either be securely sealed (bolted/welded/bonded) or secured in place with two retaining straps at least one-inch wide and extending three inches beyond the sunroof opening on each side. The panel must be flush with the roofline.
11. Windows:
  - a. Windows may be replaced with polycarbonate.
  - b. Driver and passenger door windows may be removed.
  - c. Windshields may be replaced with polycarbonate of minimum 6 mm thickness. Front and rear windshield-retaining clips or straps are required for non-glass windshields. A minimum of four exterior retaining clips (two at top and two at bottom) or two exterior retaining straps and two interior windshield-supporting bars are required. If an edge of a polycarbonate windshield is not accessible for measurement, a .125-inch diameter inspection hole must be drilled near a bottom corner of polycarbonate windshields, or an appropriately sized caliper must be supplied by the driver, to allow confirmation of thickness.
  - d. Vent holes and ducts are permitted in polycarbonate windows.
12. The original factory wiring harness must be retained, but unused portions of the wiring may be removed.
13. The OE front driver and passenger door decorative panels may be replaced with 0.060-inch aluminum or a comparable material



(including carbon fiber or similar composite materials), securely attached to the door. Window glass and window actuator mechanisms may be altered or removed. Both front doors must be capable of being opened from both inside and outside the car.

14. Integrated door bars may be removed.
15. All heating and air conditioning components may be removed. It is suggested, but not required, that the defroster remain functional.
16. Spare tire, tools, tool kits, and associated assemblies may be removed.
17. The interior mirror may be replaced with any interior mirror meeting or exceeding the visibility of the factory part.
18. The battery size, type, chemistry, and weight are free, but must be 12-volt units. Additional battery hold-downs are encouraged. Batteries must be located in the stock right side trunk well location.
19. All unused and unnecessary brackets may be removed. Unibody panels and other chassis components may not have material removed for the purposes of lightening the car.
20. Undercoating and sound-deadening materials outside the "interior" may be removed.

#### **R. Fuel Tank/Fuel Cell**

1. Fuel cells may be used. The stock tank may be retained or replaced so long as the location and installation requirements in paragraph 3 are met. For cars in which the factory stock tank is non-metallic, all factory-installed heat shields must remain intact. If a fuel cell is installed and the stock tank is also retained, only one of either the fuel cell or stock tank may provide fuel for combustion. In such cases the remaining storage source (cell or tank) must be empty of any and all substances, except that the fuel cell may retain the bladder and foam.
2. All safety fuel cells shall be constructed and certified in accordance with the FIA FT-3 or higher (FT-3.5, FT-5, etc.) specifications. All safety fuel cells shall consist of a foam-filled fuel bladder enclosed in a metal container at a minimum.
  - a. The bladder shall be installed in a container of .036-inch steel, .059-inch aluminum, or .125-inch Marlex, fully surrounding the bladder.
  - b. Fuel cell bladders require recertification by the manufacturer after five years. Only one recertification good for two years is

permitted, giving bladders a seven-year total life after which they must be replaced.

3. Fuel cells shall be located within 12 inches of the original fuel tank location. (An exception to this location requirement is any model where the original fuel tank is located beneath the rear seats). Additional reinforcement may be added to support the fuel cell, but such reinforcement shall not be attached to the roll cage in stock and prepared classes. The floor pan may be modified for installation but not for aerodynamic benefit. There shall be a sealed metal bulkhead between the driver/passenger compartment and the compartment containing the fuel cell.
4. "Fuel Starvation Kits" that include a second, in-tank fuel pump and/or additional plumbing may be installed, provided their only purpose is to prevent low fuel level starvation problems.

**S. Data Acquisition**

1. Data acquisition devices, including gauges, are permitted, as long as the driver is not able to adjust any setting on the vehicle at any time while the car is in motion. These devices are to be used for information gathering ONLY.
  - a. The stock gauge panel (Instrument Cluster) may be removed in whole or in part.
  - (1) If retained none of the devices contained within it are required to remain functional.

## **10. SPEC E30 CLASS**

- A. The Spec E30 class is designed to specify a set of E30 chassis, six-cylinder race cars that are prepared to a uniform level. The modifications required or allowed are intended to produce a fun, fast race car that feels like a race car.
- B. The Spec E30 is a class dedicated to completion between drivers, not their ability to prepare a car. Any modifications not specifically listed within the class rules are not allowed. Any variances found at the track will result in severe penalties as allowed.

- C. Vehicle safety equipment must meet or exceed BMW CCA Club Racing published safety requirements.
- D. Rules and regulations for the class are published at [spece30.com](http://spece30.com). Competitors must have a copy of the regulations available along with any technical bulletins; electronic versions will meet this requirement.

## **11. SPEC MINI**

- A. The Spec Mini class is designed to allow Mini Cooper non-S version race cars prepared to SCCA B-Spec /T4 rules to race in BMW CCA Club Racing in a point's eligible class.
- B. S-version and JCW Mini Coopers are not eligible.
- C. Preparation rules and weights will mirror the SCCA B-Spec/ T4 rules as published in the most recent online version of the SCCA GCR including any technical bulletins.
- D. Competitors must have a copy of the GCR and any technical bulletins available; electronic versions will meet this requirement.
- E. Vehicle safety equipment, with the exception of roll cages, must meet or exceed BMW CCA Club Racing published safety requirements.
- F. Roll cage specifications will mirror SCCA B-Spec rules exactly.
- G. The base weight for all model years will be the same weight as the 2007-2010 model years. BMW CCA Club Racing reserves the right to make competition adjustments to encourage level competitiveness.

## **12. Spec E 46**

- 1. The Spec E46 class is a class which utilizes non-M e46 chassis with a specific level of preparation which will emphasis driver skills and execution versus car preparation.
- 2. Vehicle safety equipment must meet or exceed BMW CCA Club Racing published safety requirements.
- 3. Specific rules for car preparation, required parts and equipment is available at <http://spece46.com/>.
- 4. Spec E46 racers must have Spec E46 rules available for scrutiny and review at all times; electronic versions will meet this requirement.

## 13. PROTESTS AND APPEALS

### A. Protests

The primary purpose of the protest process is to help ensure that race cars are properly classified. This is essential to providing a fair basis for cars of similar performance potential to race each other. A secondary purpose of the protest process is to deliver sanctions against those racers who knowingly or unknowingly assign their cars to the incorrect class. Since BMW CCA Club Racing is a series in which racers self-classify their cars, the protest process helps race officials police the classes. This process is intended to be proactive rather than reactive; that is, it is better to correct classification errors before a race or qualifying session rather than have to make adjustments and corrections to qualifying and race results afterward.

1. A protest is an action brought by an event participant or event organizer concerning a decision, act, or omission of the organizers, officials, car, driver, or other person connected with an event, which is alleged to have been a violation of these rules. Protests must be made in writing, describe the violation, be signed by the Protester, and be delivered to the Event Competition Steward. An event protest can only be made by an accepted Entrant or Event Organizer. A protest fee of \$50.00 in cash or check (made out to BMW CCA Club Racing) shall accompany each protest. The fee shall be returned only if the protest is upheld; otherwise, the fee will be deposited on behalf of BMW CCA Club Racing. Protests against refusal of entry or license certification shall not be allowed. Appeal of the Protest Committee decisions are not allowed at an event; however, an appeal of a Protest Committee decision can be made to the National Appeals Committee within 10 business days after the event or decision, whichever is later.
2. Protest of an entrant's vehicle must include the car number, a brief description of the car, and the alleged rules infraction referencing section and paragraph number, etc. Protests should be submitted prior to qualifying or race sessions to allow proper reclassification, but at the latest, must be submitted within 30 minutes of posting the results of the last officially timed run of the protested car. If the final results of the last officially timed run of the protested car are not posted at the track, such as amended results resulting from timing and scoring corrections, appeals, and protests, then the final results will be posted on the BMW CCA Club Racing Web site, and protests

must be submitted within 48 hours of that posting. When final race results are changed and posted to the Web site, participants will be notified by e-mail. An "officially timed run" is defined as a qualifying or race session of any length on any sanctioned race day. Except for extenuating circumstances, protests received later than these prescribed limits will not be considered for prior results.

3. The protest must be submitted on the official protest form, which is available on the Club Racing Web site and may also be obtained from the Competition Steward at the event.
4. Once filed, a protest or Official Action must run its due course through the process.
5. The Protest Committee will inform the protested driver of the nature of the protest and indicate the specific components or actions under protest.
6. The Protest Committee has the right to impound any protested car and to determine the method of impound. Failure by the protested driver to comply will result in the protest being upheld and the driver being disqualified from the event weekend; this disqualification is not appealable. It is the protested driver's responsibility to present his car exactly when requested by the committee in such a manner that a proper inspection can be completed. The car must remain unchanged until released by the Protest Committee. Failure to comply will result in an event disqualification of the vehicle, and other penalties may be imposed.
7. The Protest Committee is not required to provide any official paperwork to the protested driver until such time as the protest process is completed. At that time the protested driver will be provided a copy should they wish to file an appeal in the event of an upheld protest. Protest Committee decisions are not appealable at the event.
8. For any inspection that is deemed too difficult or not feasible due to time constraints or facilities at the event, the event Technical Steward shall make arrangements to seal the vehicle or components so as to maintain a state of satisfactory impound until such time as an inspection can be made at an alternate time and location. This time and location is to be determined by the Protest Committee and agreeable to the event Technical Steward. Arrangements will be made by the event Technical Steward to perform the inspection and submit the findings to the Protest Committee, after which they will render a ruling. This process must be completed within 30 days of the event or the protest will be upheld.

9. The protest may request and specify that portions of the car be dismantled, inspected, or undergo any other test provided that the protester posts a cash bond with the Protest Committee sufficient to cover the total expense of disassembly, inspection, and reassembly. If the car is found upon inspection to conform to the rules, the protester will forfeit the bond and it will then be used to cover costs involved. Should the actual costs be less than the posted bond, the difference will be returned to the protesting driver. Should the actual costs be more, the protesting driver must cover this difference. If the car is found not to conform to the rules, the protester's bond shall be returned and the driver of the protested car shall bear all expenses including reimbursement of inspection costs, and also be subject to penalty. If the protest requests that multiple assemblies of the car be dismantled and inspected, then separate bonds will be required for each major assembly. For example if the protest includes inspections of both the differential and the ECU, a separate bond for each will be established. If the differential is found to be non-conforming while the ECU is found legal, the bond for the differential will be returned to the protester while the bond for the ECU will be forfeited and used to cover costs involved with the ECU inspection. Posting of cash bonds shall not be required for Official Actions and BMW CCA Club Racing will be responsible for applicable costs if the assembly is found to be compliant. Certain inspections may be held over at the discretion of the Protest Committee, and then made after the event as a matter of convenience or technical need.
10. The Protest Committee shall at a minimum hear the arguments of the protester and the protested racer. They may also take other statements or investigate as deemed necessary by majority of the Committee members. The Protest Committee will determine the validity of the Protest by majority vote. For upheld protests, the Committee shall determine penalties that are appropriate to the seriousness of the offense. Depending upon the circumstances, it is not necessary that an upheld protest result in a penalty. The Committee may merely require reclassification of the vehicle or that vehicle corrections may be made. The Protest Committee may deny any protest it deems to be spurious or a nuisance and retain the protest fee. If a car is found to be improperly classified or to have unauthorized modifications, any penalties (equal or differing) shall be assessed against all event drivers of the car up to that time.
11. The event's Competition Steward shall normally be the chairman of the Protest Committee. He shall appoint two other committee members, one of who may be the event's Technical Steward. The Steward shall also appoint three alternate members and prominently post or announce all the names at the event prior to the first on-track session. Alternates will act as committee members if any primary

member is involved in the protest, has a conflict of interest, or is not available. Due to protest volume or conflicts of interest, it is possible to have more than one Protest Committee at an event acting on separate matters. Protest Committees shall remain empanelled until all protests are resolved or the deadline for filing event protests has passed.

12. For any protest that is upheld via inspection, the protested competitor may opt to change noncompliant parts to continue to run in the car's original class for the remainder of the event (provided the Protest Committee's penalty is not event disqualification). If the protest is upheld due to the competitor being disqualified for failure to comply with any part of the protest process, they shall not be allowed to continue to compete in their original class for the remainder of the event regardless of the Protest Committee's penalty decision.
13. Any BMW CCA Club Racing official may file an Official Action, which functions in the same manner as a protest except that no fee is required. Official Actions follow the same procedures for protests outlined in these sections. For the purpose of filing an Official Action, a Racing Official is defined as an official with the responsibility and authority to conduct and supervise the event. These would include the event Competition Steward, the event Technical Steward, the event Timing and Scoring Steward, and any additional stewards officially assigned by BMW CCA Club Racing to assist the primary stewards.

## **B. Appeals**

The appeals process is intended to provide a final recourse to an event participant who believes that he or she was incorrectly penalized at an event by a Competition Steward or Protest Committee.

1. The Club Racing National Appeal Committee has two permanent members and three rotating members.
  - a. The two permanent members are the National Competition Steward and the National Technical Steward.
  - b. Two of the rotating members are appointed by the National Competition Steward to hear an appeal. One will be a Regional Competition Steward and the other will be a Regional Technical Steward. The other rotating member will be a representative from the RAC.
- (1) Once notified that a National Appeal Committee will convene, the RAC will, within 48 hours, advise the National Competition Steward of its representative to that particular committee. The

representative may be any RAC member not present at the event or who does not otherwise have a conflict of interest.

- c. Should either of the two permanent Appeal Committee seats become vacant or unfilled, the Appeal Committee is explicitly empowered to conduct all business normally attributed to the committee.
2. Any committee member who was involved in the initial protest, decision, or 13/13 penalty, or who may otherwise have a conflict of interest, may not participate on the National Appeal Committee. In the event of a conflict of interest, the National Club Racing Chairman will appoint a substitute member from the Club Racing staff as a replacement for any Club Racing staff member. The Chairman retains full discretion in the determination of whether a conflict exists and warrants replacement of a committee member.
3. The Club Racing National Appeal Committee will make all decisions as to whether the appeal is well founded and to what extent, if any, the appealed decisions shall be increased, decreased, modified, redirected, or overturned. Decisions of the National Appeal Committee are final, binding, and not subject to further appeal with the exception of any penalty that may be awarded to the grievant or a driver other than the appellant. Should the Committee award a penalty to a driver other than the grievant or appellant that driver has the right to appeal within 15 business days and a new Appeal Committee will be constituted to hear that appeal. Committee actions and decisions are decided by majority vote. The appeal fee shall be returned if the appeal is resolved in favor of the appellant or is determined to be well-founded. Otherwise the fee will go to the Club Racing treasury.
4. Penalties assessed by an event steward or event Protest Committee may be appealed to the Club Racing National Appeal Committee. An appeal shall be in writing and addressed to the National Competition Steward. A \$50.00 appeal fee of either cash or check (made out to BMW CCA) must accompany the appeal.
  - a. Upon written request to the National Competition Steward, the appellant may obtain copies of all information and documentation held by Club Racing relating to the incident within five business days of the date of the occurrence or the decision being appealed.
  - b. The appeal must be received by the National Competition Steward within 15 business days of the date of the occurrence of the incident or decision, or 10 business days subsequent to any requested information being provided, whichever is later.



- c. The appeal must specify the grounds for appeal and must contain the information that the appellant wishes to be considered by the committee. Beyond that, additional submissions of information or evidence related to the appeal are at the request of the Club Racing Appeal Committee exclusively.
- 5. If the appeal concerns a 13/13 penalty, the Competition Steward who issued the penalty must submit his incident report to the National Competition Steward within seven days of the date of the incident. Failure to do so shall result in an automatic review of the penalty under appeal by the National Competition Steward. Without overwhelming evidence that the penalty is proper, the National Competition Steward shall dismiss the penalty specific to the appeal in question. The Club Racing Chairman shall substitute for the National Competition Steward if there is a conflict of interest.
- 6. The National Appeal Committee must submit its rulings to the National Competition Steward and the Club Racing Chairman so as to permit notification of the appellant within 45 days of the date of the appeal being received by the National Competition Steward. Failure by the Committee to make a reasonable attempt to contact the appellant by midnight Eastern Time on the 45th day shall result in an automatic reversal of the penalty or decision under appeal. Contact attempts may include e-mail, voice messaging, or delivery by First Class U.S. Mail. The racer is responsible for providing accurate contact information with the initial appeal.
- 7. Final results of Protests, Penalties and Appeals will be posted on the BMW CCA Club Racing website by BMW CCA Club Racing Officials under the section "General Information> for the racer".  
<http://www.bmwccaclubracing.com/Information/ForTheRacer.aspx>

# 14. RULES PROCESS

## A. Rules Clarifications

1. The purpose of a Rules Clarification is to resolve questions about the written rules herein without requiring an official protest.
2. All Rules Clarifications shall be made by the Club Racing Rules Committee, with the National Technical Steward being responsible for communicating the clarification via the national Club Racing Web site.
3. A request for clarification may be made by any BMW CCA member who possesses or has applied for a BMW CCA Club Racing license.
4. A request for Rules Clarification shall be submitted through the Web interface on the Club Racing Web site. The request shall cite the Rules page number and paragraph of the item in question.
5. There shall be no charge for the request.
6. A response will be determined by the Rules Committee within 30 days of the request. This response will be posted on the Club Racing Web site, and an e-mail reply shall be sent from the National Tech Steward to the requestor informing them that the clarification is available on the Club Racing Web site.
7. A posted Rules Clarification is considered part of the current year rules and therefore may be used in protest and enforcement action. Such clarification shall be effective immediately upon publication on the Club Racing Web site and will be integrated in the current rules as necessary and appropriate.
8. The Rules Committee may decline to act on clarification requests if the Committee deems the request to be frivolous, or as requiring no clarification. The Rules Committee will inform the racer of this decision.
9. NOTE: Informal questions from current or prospective racers are welcome at any time. However, clarification requests not submitted through the Web site, and not published on the Web site, have no standing and are not official clarifications. The Rules Clarification procedure facilitates formal inquiries or requested changes to the current rules.
10. It is advised that racers relying on current published clarifications bring a printed copy of the clarifications to any events they attend.

## **B. Rule Changes**

1. "The rules are intended to present a stable platform for the limits on preparation and should not undergo philosophical changes on a continuing basis. The Rules Committee is committed to maintaining the levels of preparation (stock, prepared, modified, and super-modified) as presented for a minimum period of two years. Some changes will be presented with deferred implementation dates to allow the racers to properly budget and plan. The Rules Committee is also committed to preventing progressive upward movement in preparation levels, otherwise known as "class creep". This does not preclude the implementation of safety items, correction of errors or omissions, or other such items that the Committee feels are necessary."
2. The BMW CCA Club Racing Rules Book will be maintained on-line on the Club Racing website. Rules changes will be accepted by the Rules Committee throughout the on-going year and will be reviewed for acceptance on a periodic basis. Rules changes that are accepted will become official immediately upon inclusion/ incorporation into the current on-line Rules. Changes to the on-line Rules can come from Rules Clarifications and Rules Changes that are adopted.
3. **Club Racing Rules Committee**
  - a. The Club Racing Rules Committee is comprised of the Club Racing Chairman, the National Competition Steward, the National Technical Steward, and one representative of the Racers Advisory Committee appointed by the RAC. The Club Racing Chairman will not normally cast a vote, except in circumstances where that vote is necessary to break a tie (for example, if another member were absent, abstained, or had a conflict of interest).
  - b. The RAC will officially advise the Club Racing Chairman of its representational appointment by February 1 of each year. The appointment will continue until the end of the calendar year or until officially rescinded by RAC.
  - c. Should the Club Racing Chairman not be available to serve on the Committee, the National Competition Steward will preside over committee meetings and be responsible for the rules processes. Should the National Competition Steward or National Technical Steward not be available to serve on the committee, the Club Racing Chairman will appoint a temporary replacement from the pool of regional competition and technical stewards, as appropriate. Should the RAC member of the committee not be available to serve, the RAC will appoint another RAC member to replace him or her. If any single

member of the committee is temporarily unavailable to attend a meeting or conference call or otherwise communicate with the rest of the committee, the committee may continue with the rules process; however, every effort will be made to ensure that final committee decisions are made with the participation of the full committee.

4. Rules Changes and Rules Clarifications which are adopted and incorporated into the on-line Rules Book will be also be announced to all racers by Club Racing email.

## **15. RACERS ADVISORY COMMITTEE (RAC)**

1. The Racers Advisory Committee is comprised of licensed BMW CCA Club Racers chosen by a vote of the current Club Racing license holders from each region of the country. The regions are defined to be the same geographical areas as those defined for BMW CCA national regions. The elected RAC representatives shall serve a term of two years.
2. In the event of the resignation or other departure from service by any RAC member, the Club Racing Chairman shall solicit volunteers from within the affected region. The Club Racing Chairman will appoint a replacement from the volunteer pool, subject to approval by the BMW CCA Regional Vice President. The appointee shall fill the position until the next election cycle.

# Appendix A

## Roll Cage Specifications

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### 1. General/Purpose

- A. The basic purpose of the roll cage is to protect the occupant in case of a rollover or a collision. It must be able to withstand the weight of the car landing on the roof. FIA-approved roll cages (not bolt-in) with a manufacturer's certificate of approval are allowed with any required braces being added. Factory/BMW Motorsport roll cages with documentation (matching serial number to manufacturer's certificate) are allowed.
- B. Vehicles issued logbooks prior to 1 July 2006 may have construction based on the final set of 2005 BMW CCA Club Racing Rules. These vehicles are "grandfathered" and may continue participation in BMW CCA Club Racing. However, their owners or future owners are highly encouraged to update the cages to the current standards.

### 2. Bends

- A. None of the tubing may show any signs of wrinkling, crimping, wall failure, or significant reduction in cross-sectional area. The center radius of the bends may not be less than three times the outside diameter of the roll cage tubing.

### 3. Main Hoop

- A. The main roll cage hoop shall be as wide as the full width of the interior and must be as close to the roof as possible without violating the provisions of "**Inspection**" outlined below. One continuous length of roll bar tubing shall be used as the main hoop. The main hoop must consist of not more than four bends maximum, totaling 180 degrees +/- 10 degrees and in the same plane.

### 4. Diagonal Brace

- A. At least one diagonal brace shall be used in the same plane as the main hoop. One end of the diagonal brace shall attach to the corner, or horizontal part, of the main hoop above the driver's head, within 12 inches of the driver's-side corner. The other end of the diagonal brace shall attach to the mounting plate (or to the main hoop as close to the mounting plate as practically possible) diagonally opposed to the driver's head (passenger floor).

### 5. Forward Hoops (Option 1)

- A. The forward hoops shall extend from the main hoop (in a forward direction) to the floor by following the roof and the "A" pillar of the car.

There shall be a bar connecting the two forward hoops at the top of the windshield mounted as close to the roof as possible without violating the provisions of "**Inspection**" outlined below. The forward hoops shall incorporate no more than four bends each. Optionally a "**Halo Hoop (Option 2)**" or "**Front Hoop (Option 3)**" construction is also acceptable.

## **6. Halo Hoop (Option 2)**

- A. A "halo bar" extends from the main hoop (in a forward direction) following the roof line to the windshield then following along the top of the windshield, then following the roof line back to the main hoop, thus creating a "halo" over the driver's head. A "halo" bar shall be constructed of one continuous piece of tubing. One down tube following the "A" pillar must support the "halo" on each side of the car. The down tubes shall incorporate no more than two bends each.

## **7. Front Hoop (Option 3)**

- A. A "front hoop" is a bar that extends up from the floor, then follows the "A" pillar up to the roof, then follows the roof line across the top of the windshield, then back down the other "A" pillar, and then terminates on the floor. There must be one horizontal bar (following the roof line) connecting the main hoop and the forward hoop on each side of the car. The front hoop shall incorporate no more than four bends.

## **8. Rear Braces**

- A. The main hoop must have at least two braces extending to the rear. The braces shall be attached as near as possible to the top of the main hoop, and no more than six inches below the top. The braces must not contain any bends. There must be at least 30 degrees between the plane of the main hoop and the plane of the rear braces. The main hoop rear braces shall be installed to form no more than a 105-degree angle or no less than a 75-degree angle with the main hoop when viewed from the top. They may go through any rear bulkheads provided the bulkhead is sealed around the cage braces.

## **9. Door Bars/Side Impact Protection**

- A. At least one roll cage door bar on driver side and one on the passenger side must be used.
- B. Stock and Prepared classes:
  - 1. If the roll cage is equipped with side protection door bars that extend to the outer skin of the door, the door's stock side impact beam may be removed.
  - 2. If the roll cage door bars do not extend fully to the outer skin of the door, the stock side impact beam, if originally equipped, shall not be removed.

## **10. Foot Protection**

- A. A maximum of two additional bars may be extended from each front hoop down bar to the front foot well (two on each side) to protect the occupant's feet/legs. The two foot protection bars on each side must use the same mounting point on the wheel well in Stock and Prepared classes.

## **11. Mounting Points**

- A. The roll cage shall be mounted to the floor of the car in six, seven, or eight points. The cage shall not go through the firewall in Stock or Prepared classes. The seventh and eighth points must attach to the firewall or front foot wells solely for the purpose of foot protection. All cage attachment points must be mounted to plates. Each required cage bar shall terminate on a plate with a 360-degree weld to the mounting plate. There shall be only one mounting "point" per plate. This point is defined as where the "required tube" mounts. All additional tubes mounted to that plate must be mounted as close to the required tube as possible.

## **12. Mounting Plates**

- A. Each mounting plate shall be no greater than 100 square inches and no greater than 12 inches or less than two inches on a side. Welded mounting plates shall be at least 0.080-inch thick, and must contain an inspection hole of .325-inch diameter. Plates may extend onto vertical sections of the structure. Any mounting plate may be multi-angled, but shall not exceed 100 square inches total including vertical sections. Each mounting plate must have an area of not less than nine square inches. Each mounting plate must be welded around a minimum of 50% of each edge, and with a minimum stitch weld length of 1.5 inches.

## **13. Tube/Mounting Plate Specifications**

- A. Any number of tubes may attach to a plate so long as they are touching each other at the plate. There may be a small gap between tubes to allow welding 360 degrees around each tube. If there is no gap between the tubes, they must be welded around the base as much as possible to form a single figure-8 weld, AND the tubes must be welded to each other two inches up from the base plate.

## **14. Welds**

- A. All welding must be of the highest quality with full penetration and shall conform to the American Welding Society D1.1, 1994 Edition, Structural Welding Code, Chapter 10, Tubular Structures and Standards for the material used. Arc welding should be used whenever possible. It is strongly recommended that the welder inspect all welds using



Magnaflux™, x-ray, or other effective methods. All tubes must be welded 360 degrees around the circumference of the tube.

## 15. Tube Structure Design/Body

- A. Tubes may touch the body in any place (not to violate the provisions of “**Inspection**” outlined below), but shall not be attached anywhere except as permitted by the preparation rules. No deformation of the interior body panels is permitted, except that the horizontal part of the sheet metal between the top of the “B” pillar and the top of the “A” pillar (next to the driver’s and/or passenger’s head) may be pushed in to accommodate the roll cage. The intent of this allowed deformation is strictly to allow for more headroom for the driver.

## 16. Additional Reinforcement

- A. Any number of additional reinforcing bars and braces are permitted within the structure of the cage provided that they meet all the installation, weld quality, and material/bend specifications. Installation of additional reinforcing bars/braces does not allow for removal of any required bar/brace/hoop and does not allow for alterations in these.

## 17. Roll Cage Tubing Specifications

- A. **Material.** Seamless, or DOM (Drawn over Mandrel) mild steel tubing (SAE 1010, 1020 or 1025) or equivalent, or chromoly steel tubing (SAE 4130) shall be used for all roll cage structures. Docol R8 tubing is allowed as long as it maintains the same OD as defined for the weight of the car, meets the SAE 4130 specification and all other cage build specifications.
- B. **Size.** For the purposes of determining roll bar tubing sizes, vehicle weight is as raced, WITHOUT fuel and driver. Note: There is an allowance of minus 0.010 inches on all tubing thicknesses. Minimum tubing size for the required tubes of the roll cage is:
  - 1. Up to 1500 pounds
    - a. 1.375” x 0.095” DOM/Chromoly/Seamless
  - 2. 1501 to 2500 pounds
    - a. 1.500” x 0.095” DOM/Chromoly/Seamless
    - b. 1.500” x 0.120” ERW\* (No issuance of log books for cars with ERW cages after 07/01/03) \*Note- Specifications listed for reference for inspection of grandfathered vehicles.
  - 3. 2501 to 3000 pounds
    - a. 1.500” x 0.120” DOM/Chromoly/Seamless
    - b. 1.750” x 0.095” DOM/Chromoly/Seamless

- c. 1.750" x 0.120" ERW\* (No issuance of log books for cars with ERW cages after 07/01/03) \*Note- Specifications listed for reference for inspection of grandfathered vehicles.
- 4. 3001 to 4000 pounds
  - a. 1.750" x .120" DOM/Chromoly/Seamless.
  - b. No ERW allowed.
- 5. Over 4000 pounds
  - a. 2.000" x 0.120" DOM/Chromoly/Seamless.
  - b. No ERW allowed.

## **18. Bending Allowances**

- A. If the maximum number of bends is exceeded all components shall be made from the tubing size listed for the next heavier category and must be approved by a BMW CCA Club Racing Technical Steward.

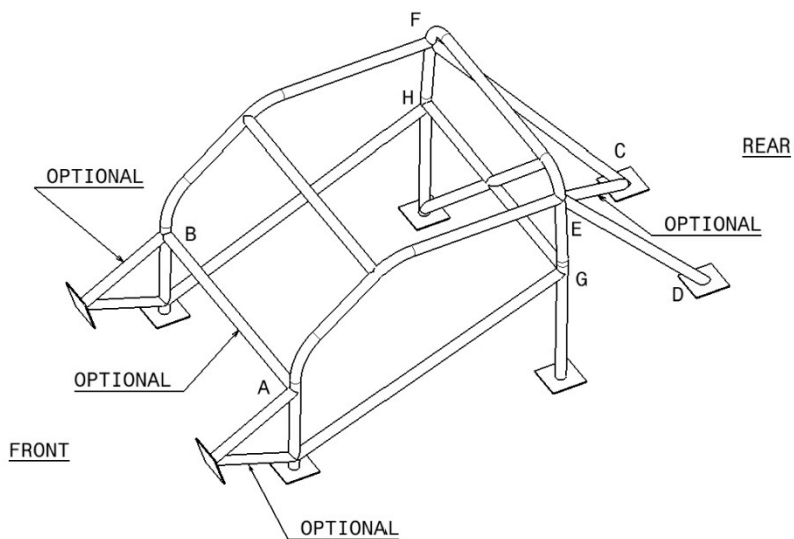
## **19. Inspection**

- A. A 0.1875-0.2500 (3/16-1/4 inch) inspection hole must be drilled in each of the required bars in a non-critical area for the purpose of determining wall thickness. All welds, except those mounted to plates on the floor, must be accessible for inspection (360 degrees).

## **20. Alternate Design/Construction**

- A. Alternative roll cage design and/or construction may be accepted with the designers and/or constructors or structural engineer's certification that the cage meets or exceeds the specifications described herein.
  - 1. Certificate must include the certifiers name, address, business name, business license number, and professional credentials.
  - 2. The certification document must be attached to the vehicles logbook.
  - 3. If "plinth" boxes are used the constructor must include in the certification the structure includes a load distributing bottom plate.
- B. Approval by the National Technical Steward or his/her designee is required.
  - 1. Plans/drawings may be submitted in advance.
  - 2. Final approval requires a physical inspection.

## C. ROLL CAGE DIAGRAM



TYPICAL ROLL CAGE

## Appendix B

### Harness belt Supplemental Information

#### 1. APPROVED BELT CONFIGURATIONS

- A. All harness belts must be installed based on the instructions provided by the harness belt manufacturer. Figure 1 details the recommended installation angles of each harness belt anchor point based on the latest testing completed by the FIA. The following types of harness belts are approved. Both latch-link and CAM lock locking systems are allowed.

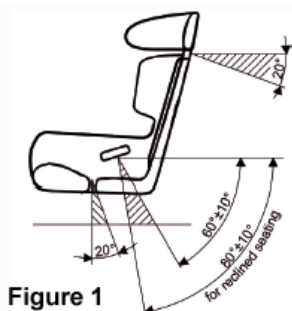


Figure 1

1. **Standard Belt** – Six-point system for automobiles with an upright (to 30 degrees) seating position. See Figures 2-4. A six-point system consists of a two-inch or three-inch lap belt, three-inch shoulder straps (two-inch allowed with HANS), or two-inch shoulder straps with three-inch wide professional padding (padding NOT allowed with HANS), and two approximately two-inch leg straps. The buckles for the lap and shoulder straps must be of metal-to-metal, quick-release type at the locking mechanism (such as cam-lock)
  - a. The dual leg straps have a single metal-to-metal connection to the locking mechanism and a separate mounting point to the floor or roll cage for each leg of the anti-submarine strap. Leg straps must pass through the sub-strap hole provided in the race seat located immediately in front of the crotch. Locate the mounting points by following the plane of the shoulder belts as they pass over the chest extending the plane to intersect the floor and then measure a 20-degree angle rearward. This is the center point. Measure two inches left and right of the center to locate each mounting point for an eyebolt or direct bolt. If the legs are wrapped, the center point is the center of the webbing for each strap. A seventh point is not used in this configuration.

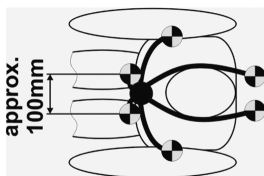


Figure 2

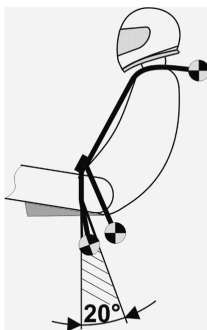


Figure 3

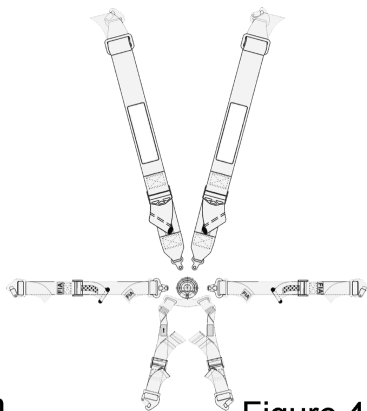


Figure 4

## Standard 6-Point Belt Installation

2. **Formula Belt** – Six or seven point system for automobiles with semi-reclined (recline of +30 degrees) seating position. See Figures 5-7. Consists of a two-inch or three-inch lap belt, three-inch shoulder straps (two-inch allowed with HANS), or two-inch shoulder straps with three-inch wide professional padding (padding NOT allowed with HANS), and two, approximately two-inch, leg straps. The buckles for the lap and shoulder straps must be of metal-to-metal, quick-release type at the locking mechanism (such as cam-lock or latch-link). Formula Style belts with rear mounted sub straps (Figure 5) are not recommended for use in upright seating positions unless a 7th point is added (Figure 5.A)
- a. Each side lap belt and leg strap shares a single (or immediately adjacent) mounting point located within the seat or seating tub or at a point with direct unencumbered routing. Each leg strap loops around the shoulder belt connector, passes down through a “D-Ring” on the lap belt, wraps around the thigh, and passes directly under the driver’s bottom outwards to the same or an immediately adjacent location of the lap belt mounting point. The significant incline of the seat bottom combined with the weight of the driver sitting directly on the leg straps helps to load the lap belt thereby reducing “ride-up” of the lap belt when loaded. If used in an automobile with an upright seating position a seventh point is recommended and pictured in Figures 5.A-7.A. The purpose of the seventh point is to provide better and faster loading to the lap belt and to help minimize upward movement in the seat allowed by rearward mounted leg straps. Locate the mounting point by following the plane of the shoulder belts as they pass over the

chest extending the plane to intersect the floor, and this is the mounting point.

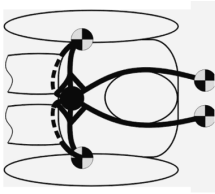


Figure 5

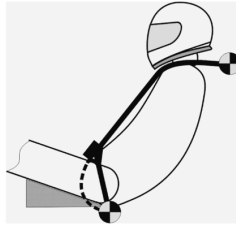


Figure 6

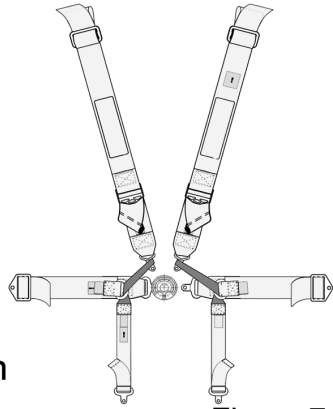


Figure 7

## Formula Style Belt Installation

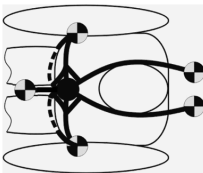


Figure 5.A

Applies only to  
Formula and Hybrid  
Style Belts with rear  
mounted anti-sub straps

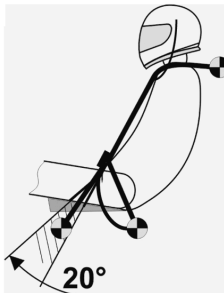


Figure 6.A

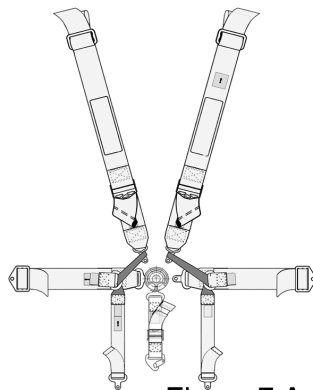


Figure 7.A

## Seven Point Belt Installation

3. **Hybrid Belt** – Six- or seven-point system for automobiles with an upright OR semi-reclined seating position. See Figure 8 for belt layout. Figures 2 and 3 show upright/forward mounting. Figures 5 and 6 show reclined/rearward mounting. Consists of a two-inch or three-inch lap belt, three-inch shoulder straps (two-inch allowed with HANS), and two, approximately two-inch, leg straps.

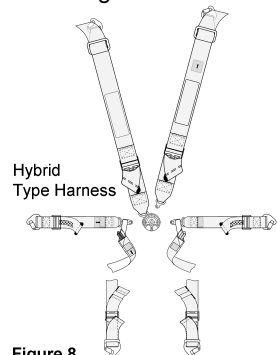


Figure 8

- a. In this configuration, the leg straps are looped around the lap belt connectors on either side of the locking mechanism. Anti-submarine straps can be mounted in either the Standard Belt mounting configuration or in the Formula Belt mounting configuration. If the Formula Belt mounting configuration is used, a seventh point can be added (see Figure 5.A and 6.A). Forward mounting position is recommended for upright seating positions.

## 2. LAP BELT MOUNTING

- A. The lap belts shall be mounted rearward of the pelvis, between two lines drawn at 60 degrees and 80 degrees, below the horizontal (see Figure 1).
- B. The lap belts shall pass through the seat, without interference, to the attachment points, pulling in plane with the mounting hardware without any visible twisting or edge loading on adjusters or mounting brackets. Mounting points must be as close to the side of the seat and must not rub on any seat brackets, rough, or sharp edges.
- C. Lap belt mounting points must be integrated with the frame of the car or to specific welded mounting tabs on the roll cage. If mounting points are located on seat brackets, they must be certified by the bracket manufacturers specifically for such use. Mounting points created in the floor or transmission tunnel must be reinforced with backing plates of sufficient size to spread the load.
- D. Lap belts with bolt on connections must allow bracket to pivot either by use of a machined sleeve or by backing the lock nut off just enough so that bracket can pivot. This is critical to prevent loading of one edge. Eye bolts must be aligned properly so that the snap-on connector is not twisted or loaded at an angle that might load one edge of the webbing while the harness is being used.
- E. If bolt-in or snap-on mounts are used in conjunction with a three-bar adjuster the complete wrap must be completed as detailed in Figure 9 and described in article 6 below

## 3. SHOULDER STRAP MOUNTING

- A. The shoulder harness shall be the over-the-shoulder type. There must be a single release common to the lap belt and anti-submarine straps. Only separate shoulder straps are

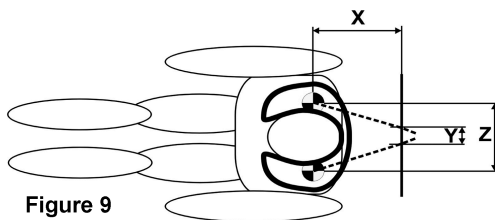


Figure 9

permitted. (Y-type shoulder straps are not allowed.) H-type configuration is allowed.

- B. The shoulder harness shall be mounted as closely behind the seat back as possible, not to exceed 12 inches.
- C. The shoulder harness must be mounted at an angle of 0 degrees to 20 degrees from the horizontal plane measured from the top of the shoulder or the top of the HANS (see Figure 1). In no case shall the shoulder harness be mounted above the horizontal at shoulder height.
- D. The shoulder straps shall pass over the driver's shoulders (or over the HANS), through the seat, in a direct line to the attachment points without any interference caused by the seat back openings or other obstacles. The formula  $Y = Z - (X \times .50)$  can be used to determine the "ideal" distance between attachment points (see Figure 9). Where the shoulder belts are wrapped around a harness bar, the Y dimension is measured from the centerline of the webbing of each shoulder strap. Where the shoulder belts are bolted the Y dimension is measured center to center of each mounting bolt.
- E. Proper alignment of shoulder straps, unencumbered belt routing, seat opening clearances, and optimum attachment locations will be inspected and verified with the driver seated in the car and wearing an approved head and neck restraint system, the harness belts, and a helmet.
- F. In cases where the driver is in a semi-reclining position, the shoulder harness shall be attached so that the angle between a line drawn through the driver's spine and the shoulder harness is 70 degrees or greater.
- G. Sternum straps are not recommended (and not permitted with a HANS device).



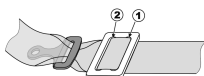


Figure 10

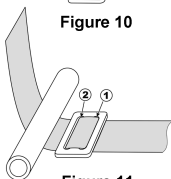


Figure 11

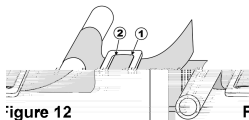


Figure 12

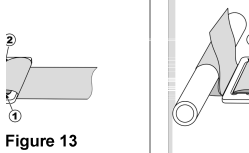


Figure 13

#### 4. ANTI-SUBMARINE LEG STRAP MOUNTING

- A. The double leg straps of the six-point system may be attached to the floor, to a purpose-built element of the cage, or to purpose-built mounting points in the seat as provided by an approved seat manufacturer.
- B. A separate attachment point connection must be provided for each leg strap.
- C. Attachment points may use bolts, eye bolts with snap-on connectors, or wrap mounts to roll cage, seat, or chassis points designed for the sub-strap loads.
- D. Bolts and eye bolts through the floor must be reinforced with backing plates provided by the harness manufacturer or large washers on the underside to spread loads.
- E. Wrap mounts to specific bars as part of the cage are allowed using only wrap mount hardware provided by the harness manufacturer following the manufacturers defined wrapping instructions.
- F. Formula belt and Hybrid belt anti-sub leg straps may share the lap belt mounting point in rearward mounting installations providing there is a direct unencumbered routing as outlined in the belt descriptions. A seventh point is always recommended when sub-straps are mounted rearward to points at or near the lap belt.

## 5. WEBBING MATERIAL

- A. The material of all straps shall be nylon or Dacron polyester, and in new or perfect condition. Belts showing any significant signs of wear shall be disallowed at the discretion of the Technical Steward, regardless of expiration date.

## 6. THREE-BAR ADJUSTERS

- A. Three-bar adjusters may be used for wrap mounting shoulder belts around harness bars or leg straps around mounting bars. The adjusters can also be used to secure webbing wrapped through attachment hardware. When three-bar adjusters are used, they shall be placed as close to the mounting points as possible. Figures 10 through 14 have the proper wrapping techniques detailed in them:
  - 1. Slide the webbing through slot 1 and 2 as shown
  - 2. Make sure the protruding strap end is long enough to have sufficient webbing length available for the following wrapping procedure. A minimum of 360 to 400 mm (14.2 to 15.75 inches) is recommended.
  - 3. The three-bar slide shall be positioned as close as possible to either the roll cage bar or to the end bracket.
  - 4. Wrap the free strap end from underneath around the roll cage bar or through the webbing slot of an end bracket.
  - 5. In case of the combination of a 50 mm bracket slot and 75 mm webbing, fold the webbing in as shown.
  - 6. Wrap webbing back through slot 2 and 1.
  - 7. Fold strap end back and run it through slot 2 again.
  - 8. Make sure the strap end protrudes at least 100 mm (4 inches) or even longer from slot 2. If it is less than 100 mm disassemble and start over again. If longer, roll in the strap end and fix it by a cable tie to the shoulder belt.
  - 9. Check again for proper shoulder belt tilt lock adjuster positioning and for the three-bar slide to be as close as possible to the roll cage bar or end bracket.

## 7. MOUNTING POINTS AND HARDWARE

- A. The minimum acceptable bolts used at the attachment points of lap, shoulder, or anti-submarine straps must be SAE Grade 5 minimum diameter of 0.325 inches.

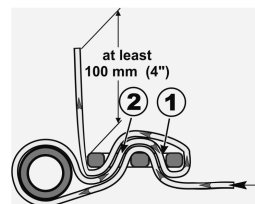


Figure 14

- B. Where possible, the lap belt, shoulder harness, and anti-submarine straps should be mounted to the roll structure, or frame of the car. Where this is not possible, harness manufacturer-provided or equivalent backing plates, or large diameter mounting washers or equivalent must be used to spread the load. Bolting through aluminum floor panels, etc., is not acceptable.
- C. Straps utilizing a hook with a spring-loaded clip, which attaches to an eyebolt, must use a cotter pin or safety wire through the small hole that prevents the clip from opening.

## Appendix C

### Electrical Disconnect Specifications

1. A standard electrical disconnect (battery cut-off) switch is required on all cars competing in the BMW CCA Club Racing program.
2. This switch must be wired such that electrical power to all circuits including the alternator is disconnected, except to an electrically operated on-board fire extinguishing system. The engine must stop running when the switch is activated.
3. In the interest of convenience, the switch may be mounted in the compartment near the battery and operation effected by a pull wire passing to the outside. The preferred location of the pull wire is on the driver's side. It must be clearly visible and its position marked with an approved decal of "lightning bolt" and the word "OFF" (see below for one example). The decal can be placed on the window glass as opposed to the bodywork, as close as possible to the pull wire. It is recommended that the pull wire be painted red for visibility. Those vehicles with a permanently mounted switch or pull wire in another location will be allowed that alternate location providing the position is clearly marked with the approved decal and the switch or pull wire is easily accessible from outside the vehicle.



4. This requirement does not have to be viewed as a difficult one with which to comply and can very easily be accomplished with the fabrication of a simple bracket to hold the switch near the battery. Braided wire can be used for the pull and it should pass through a small bracket mounted inside the compartment. A loop in the end of the cable completes the installation. Pulling the cable rotates the switch and disconnects the battery from the circuit.

# Appendix D

## Vehicle Classification and Specifications

### 1. SPORT AND PREPARED

- A. Vehicles of the same engineering designation (for example, E36, E46), type (for example, 325, 330, 318), configuration (for example, two-door, four-door, all-wheel drive) and horsepower will be weight equalized to the lowest of the model year factory weights.
- B. Cars will be initially classified based upon published factory stock weight (pounds) and published factory stock power (SAE bhp) using lbs./bhp ratios as follows:

G	=	Under 10.00 lbs./bhp
H	=	12.50 to 10.00
I	=	12.50 to 13.99
J	=	14.00 to 16.59
K	=	16.60 to 18.99
L	=	19.00 to 22.49
M	=	22.50 and over

### 2. MODIFIED

- A. Cars will be classified based upon actual engine displacement as follows:

A	=	over 5000.000cc
B	=	3499.001cc to 5000.000cc
C	=	2980.001cc to 3499.000cc
D	=	2199.001cc to 2980.000cc
E	=	1800.001cc to 2199.000cc
F	=	under 1800.000cc

### 3. OFFICIAL VEHICLE SPECIFICATIONS

..	Model	Product Years		Fact BHP	Fact Wt.	Stock Wt.	Lbs./ bhp	Class	PREP Wt.
Type 114	1602	1971	1975	85	2161	2161	25.42	M	2075
Type 114	2002	1968	1973	106	2210	2210	20.85	L	2122
Type 114	1600-2	1966	1971	85	2072	2072	24.38	M	1989
Type 114	1600TI	1967	1968	105	2116	2116	20.15	L	2031
Type 118	1500 4-dr	1962	1964	90	2370	2370	26.33	M	2275
Type 118	1600 4-dr	1964	1966	83	2359	2359	28.42	M	2265
Type 118	1800 4-dr	1963	1971	90	2403	2403	26.70	M	2307
Type 118	1800TI 4-dr	1964	1966	124	2400	2400	19.35	L	2304
Type 121	2000cs	1965	1970	121	2646	2646	21.87	L	2540
Type 121	2000TI 4-dr	1966	1970	135	2535	2535	18.78	K	2434
Type 121	2000tii	1969	1972	130	2579	2310	17.77	K	2218
E3	2500	1968	1976	170	3005	3005	17.68	K	2885
E3	2800	1968	1971	170	2998	2998	17.64	K	2878
E3	3.0s	1973	1976	170	3320	3320	19.53	L	3187
E3	3.0si	1975	1976	176	3420	3420	19.43	L	3283
E3	Bav.Euro 2.8	1976	1976	170	3420	3420	20.12	L	3283
E3	Bavaria	1971	1972	170	2954	2954	17.38	K	2836
E3	Bavaria	1973	1974	180	3235	3235	17.97	K	3106
E6	2002	1974	1976	106	2370	2210	20.85	L	2122
E6	2002tii	1971	1973	130	2310	2310	17.77	K	2218
E6	2002tii	1974	1974	125	2420	2310	18.48	K	2218
E9	2800cs	1968	1971	170	3025	3025	17.79	K	2904
E9	3.0cs	1971	1975	180	3175	3175	17.64	K	3048
E9	3.0CSi	1971	1975	176	3086	3086	17.53	K	2963
E9	3.0CSL	1973	1975	206	2800	2800	13.59	I	2688
E21	320i	1977	1979	110	2601	2601	23.65	M	2497
E21	320i	1980	1983	101	2396	2396	23.72	M	2300
E24	633CSi	1978	1982	177	3500	3280	18.53	K	3149
E24	633CSi	1983	1984	181	3280	3280	18.12	K	3149
E24	635CSi	1985	1986	182	3375	3375	18.54	K	3240
E24	635CSi	1988	1989	208	3550	3550	17.07	K	3408
E24	635CSi Euro	1978	1984	218	3153	3153	14.46	J	3027
E24	M6	1987	1989	256	3570	3570	13.95	I	3427
E24	M6 Euro	1983	1989	286	3308	3308	11.57	H	3176
E28	528e	1982	1988	121	3100	3100	25.62	M	2976
E28	533i	1982	1984	181	3120	3120	17.24	K	2995
E28	535i	1985	1988	182	3270	3270	17.97	K	3139

..	Model	Product Years		Fact BHP	Fact Wt.	Stock Wt.	Lbs./ bhp	Class	PREP Wt.
E28	535is	1987	1988	182	3270	3270	17.97	K	3139
E28	M5	1987	1988	256	3420	3420	13.36	I	3283
E28	M5 Euro	1987	1988	286	3155	3155	11.03	H	3029
E28	M535i Euro	1986	1986	218	3058	3058	14.03	J	2936
E30	316 Euro	1984	1990	90	2183	2183	24.26	M	2096
E30	318i	1984	1985	102	2361	2361	23.15	M	2267
E30	318i 4-dr	1990	1991	134	2657	2602	19.42	L	2498
E30	318is	1990	1991	134	2602	2602	19.42	L	2498
E30	325/325e	1984	1985	121	2770	2770	22.89	M	2659
E30	325/325e	1986	1986	121	2770	2770	22.89	M	2659
E30	325es	1986	1988	121	2785	2785	23.02	M	2674
E30	325	1987	1988	121	2765	2765	22.85	M	2654
E30	325i	1987	1988	168	2850	2811	16.73	K	2699
E30	325i	1989	1989	168	2895	2811	16.73	K	2699
E30	325i	1990	1991	168	2811	2811	16.73	K	2699
E30	325is	1987	1988	168	2815	2811	16.73	K	2699
E30	325is	1989	1991	168	2865	2811	16.73	K	2699
E30	325iX	1988	1990	168	3010	2955	17.59	K	2837
E30	325iX	1991	1991	168	2955	2955	17.59	K	2837
E30	M3	1988	1991	192	2733	2733	14.23	J	2624
E31	850CSi	1994	1994	372	4240	4240	11.40	H	4070
E34	525i	1989	1990	168	3395	3395	20.21	L	3259
E34	525i	1991	1992	189	3484	3484	18.43	K	3345
E34	525i	1993	1995	189	3484	3484	18.43	K	3345
E34	530i	1993	1995	215	3627	3627	16.87	K	3482
E34	535i	1989	1993	208	3570	3570	17.16	K	3427
E34	540i	1995	1995	282	3693	3693	13.10	I	3545
E34	M5	1991	1993	310	3805	3805	12.27	H	3653
E36	318i 4-dr	1992	1994	138	2867	2867	20.78	L	2752
E36	318i 4-dr	1995	1995	138	2933	2867	20.78	L	2752
E36	318i 4-dr	1996	1997	138	2976	2867	20.78	L	2752
E36	318is	1992	1994	138	2867	2867	20.78	L	2752
E36	318is	1995	1995	138	2933	2867	20.78	L	2752
E36	318is	1996	1997	138	2976	2867	20.78	L	2752
E36	323is	1998	1998	168	3075	3075	18.30	K	2952
E36	325i 4-dr	1992	1992	189	3087	3021	15.98	J	2900
E36	325i 4-dr	1993	1995	189	3087	3021	15.98	J	2900
E36	325is	1992	1992	189	3021	3021	15.98	J	2900
E36	325is	1993	1995	189	3087	3021	15.98	J	2900

..	Model	Product Years		Fact BHP	Fact Wt.	Stock Wt.	Lbs./ bhp	Class	PREP Wt.
E36	328i 4-dr	1996	1998	190	3120	3120	16.42	J	2995
E36	328is	1996	1998	190	3120	3120	16.42	J	2995
E36	M3	1995	1995	240	3175	3175	13.23	I	2970
E36	M3	1996	1999	240	3175	3175	13.23	I	2970
E36	M3 4-dr	1996	1998	240	3175	3175	13.23	I	2970
E36	M3 Light Wt (Stock)	1995	1995	240	2950	2950	12.29	H	n/a
E36	M3 Light Wt (Prepared)	1995	1995	240	2950	n/a	n/a	I	2970
E36	M3 w/ Euro S50B30 swap	1995	1999		3175	n/a	n/a	H	2900
E36	M3 w/ Euro S50B32 swap	1995	1999		3175	n/a	n/a	H	3200
E36/5	318ti	1995	1995	138	2745	2745	19.89	L	2635
E36/5	318ti	1996	1999	138	2745	2745	19.89	L	2635
E36/5	318ti Active	1996	1999	138	2745	2745	19.89	L	2635
E36/7	Z3 1.9	1997	1998	138	2701	2701	19.57	L	2593
E36/7	Z3 2.3	1999	2000	170	2899	2899	17.05	K	2783
E36/7	Z3 2.5i	2001	2002	184	2899	2899	15.76	J	2783
E36/7	Z3 2.8	1997	1998	189	2844	2844	15.05	J	2730
E36/7	Z3 2.8	1999	2000	193	2910	2844	14.74	J	2730
E36/7	Z3 3.0i	2001	2002	225	2910	2910	12.93	I	2794
E36/7S	M Roadster	1998	2000	240	3086	3086	12.86	I	2963
E36/7S	M Roadster	2001	2001	315	3086	3086	9.80	G	2963
E36/7S	M Roadster	2002	2002	315	3131	3086	9.80	G	2963
E36/8	Z3 Cpe 2.8	1999	2000	193	2943	2943	15.25	J	2825
E36/8	Z3 Cpe 3.0i	2001	2002	225	2943	2943	13.08	I	2825
E36/8S	M Coupe	1998	2000	240	3131	3131	13.05	I	3006
E36/8S	M Coupe	2001	2002	315	3131	3131	9.94	G	3006
E39	525i	2001	2003	184	3450	3450	18.75	K	3312
E39	528i	1997	1998	190	3450	3450	18.16	K	3312
E39	528i	1999	2000	193	3495	3495	18.11	K	3355
E39	530i	2001	2003	225	3494	3494	15.53	J	3354
E39	540i	1997	1998	282	3748	3748	13.29	I	3598
E39	540i Sport/6	1999	2002	282	3748	3748	13.29	I	3598
E39	540i Sport/6	2003	2003	290	3748	3748	12.92	I	3598
E39	M5	2000	2003	394	4024	4024	10.21	H	3863



..	Model	Product Years		Fact BHP	Fact Wt.	Stock Wt.	Lbs./bhp	Class	PREP Wt.
E46	323i	1999	2000	170	3153	3153	17.1	K	2901
E46	325i	2001	2001	184	3241	3197	16.2	K	2982
E46	325i	2002	2003	184	3219	3197	16.1	K	2961
E46	325Ci	2001	2001	184	3252	3197	16.2	K	2982
E46	325Ci	2002	2003	184	3197	3197	16.0	K	2941
E46	325xi	2001	2001	184	3494	3461	17.5	K	3214
E46	325xi	2002	2003	184	3461	3461	17.3	K	3184
E46	328i	1999	2000	193	3197	3197	15.2	J	2941
E46	330i	2001	2001	225	3318	3285	13.6	J	3053
E46	330i	2002	2003	225	3285	3285	13.4	J	3022
E46	330i Perf. Pkg.	2003	2005	235	3285	3430	12.9	J	3022
E46	330Ci	2001	2001	225	3351	3285	13.7	J	3083
E46	330Ci	2002	2003	225	3285	3285	13.4	J	3022
E46	330xi	2001	2001	225	3527	3483	14.4	J	3245
E46	330xi	2002	2003	225	3483	3483	14.2	J	3204
E46	M3	2001	2003	333	3415	3415	9.4	H	3142
E52	Z8	2001	2003	394	3494	3494	8.87	G	3354
E85	Z4 2.5i	2003	2003	184	2932	2932	14.7	J	2697
E85	Z4 3.0	2007	2008	215	3020	3020	12.9	J	2778
E85	Z4 3.0i	2003	2003	225	2998	2998	12.3	I	2758
E85	Z4 3.0si	2007	2008	255	3086	3086	11.1	H	2839
E85	Z4 M Roadster	2006	2011	330	3197	3197	8.9	G	2941
E86	Z4 Coupe	2006	2010	255	3108	3108	11.2	H	2859
E86	Z4 M Coupe	2006	2010	330	3230	3230	9.00	G	2972
E82	128i	2008	2012	230	3252	3252	12.8	J	2951
E82	135i	2008	2012	300	3373	3373	10.3	G	3103
E90/92	325i	2006	2006	215	3285	3285	14.1	J	3022
E90/92	325i Sport	2006	2006	215	3351	3285	14.3	J	3083
E90/92	325Xi	2006	2006	215	3560	3550	15.2	J	3275
E90/92	328i	2007	2008	230	3340	3340	13.4	J	3073
E90/92	328i	2010	2010	230	3351	3351	13.4	J	3083
E90/92	328xi	2007	2008	230	3582	3582	14.3	J	3295
E90/92	330i	2006	2006	255	3417	3415	12.3	I	3144
E90/92	330i Sport	2006	2006	255	3450	3415	12.4	I	3174
E90/92	330Xi	2006	2006	255	3627	3540	13.1	I	3337
E90/92	335i	2007	2012	300	3571	3571	11.0	G	3285
E90/92	335i xDrive	2010	2012	300	3759	3759	11.5	H	3458
E90/92	M3	2008	2013	414	3704	3704	8.2	G	3408

..	Model	Product Years		Fact BHP	Fact Wt.	Stock Wt.	Lbs./bhp	Class	PREP Wt.
R50	Mini Cooper	2002	2006	115	2524	2524	21.95	L	2423
R53	Mini Cooper S	2002	2004	163	2678	2678	16.43	J	2571
R53	Mini Cooper S	2005	2006	168	2678	2678	15.94	J	2571
R53	Mini Cooper S JCW Package	2005	2006	207	2678	2678	12.94	I	2571
R56	MINI Cooper	2006	2008	118	2524	2524	21.39	L	2423
R56	MINI Cooper	2010	2010	118	2568	2568	21.76	L	2465
R56	MINI Cooper S	2006	2008	172	2634	2634	15.31	J	2529
R56	MINI Cooper S	2010	2010	172	2679	2679	15.58	J	2571
R56	MINI Cooper S JCW Package	2007	2010	208	2701	2701	12.99	I	2593

The above list consists of the most common cars. If the car you wish to compete with is not in the above table, contact the National Tech Steward.

#### 4. OFFICIAL SPEC E36™ SPECIFICATIONS

- A. Spec E36 weights include the driver and all personal safety equipment.

Factory Code	Model	Product Years		Fact BHP	Fact Wt	SE36 Weight	SE36 Lbs/HP
E36	325i 4-dr	1992	1992	189	3087	2760	14.60
E36	325i 4-dr	1993	1995	189	3087	2760	14.60
E36	325is	1992	1992	189	3021	2760	14.60
E36	325is	1993	1995	189	3087	2760	14.60
E36	328i 4-dr	1996	1998	190	3120	2830	14.89
E36	328is	1996	1998	190	3120	2830	14.89

#### 5. OFFICIAL E30 M3 TOURING CAR SPECIFICATIONS

- A. E30 M3 Touring Car Class weights include the driver and all personal safety equipment
- B. Minimum weight is subject to adjustment for Transition Allowances in Paragraph 9.O

<b>Factory Code</b>	<b>Model</b>	<b>Product Years</b>		<b>Class</b>	<b>E30M3TC Weight</b>
E30	M3	1988	1991	M3	2550

## **APPENDIX E**

### **Flags, Signals and Communications**

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#### **1. PURPOSE AND METHODS**

- A. Course Officials (Flaggers) are stationed around the course in various locations to provide communication. They serve two main functions with respect to communications. First, they communicate information to the drivers on course. Second, they provide communication about the status of their assigned area to Race Control. Course Officials provide one of the most crucial services available to the drivers while on course.
- B. In general, there are many methods used by the Officials to effectively communicate with the drivers throughout the day. However, this section shall address the methods of communication that are most commonly used to provide information to the drivers while they are on course, and in the pit lane.
- C. The use of colored flags, lights, signs, and hand signals are the most common ways of providing information and commands to the drivers. For the purposes of this section, the term “signal” may be used generically, to describe any one of these forms of communication, or any combination thereof.
- D. Signal (i.e. flag) Categories
  1. There are five basic categories of signals (flags). Any given signal (flag) can fit into any one or more of the following categories.
    - a. Global signals provide information about the entire course and/or the status of the session.
    - b. Local signals provide information about the conditions that pertain to a particular section of track.
    - c. Personal signals provide information that is specifically meant for a particular driver only.
    - d. Command signals dictate an order to follow the applicable procedures listed in this section, and immediate compliance is mandated. Certain Command signals may also provide some advisory information, in addition to issuing a mandatory order. This is a side benefit.

- e. Advisory signals provide useful information, or serve as a warning, to the driver(s). This information is not a command, and is meant simply to inform or advise the driver(s).

## 2. FLAG DESCRIPTIONS AND MEANINGS

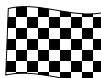
### A. Green Flag

1. Categories: Advisory, Global
2. Description: Solid green, waving or motionless, and usually only displayed at the starting line, as designated by the markings at the facility.
3. Uses: Advises drivers that the session has begun. This flag pertains to the condition of the entire course at the time that it is being displayed. Local condition/command flags may be displayed with it. The green flag indicates the course is clear.



### B. Checkered Flag

1. Categories: Command
2. Description: A pattern of alternating black and white squares. The pattern resembles a "Chessboard."
3. Uses: Functions to inform the drivers that the session is over. This flag is not global because, the drivers that have not passed by this flag are driving under "Green Flag" conditions. Command: Drivers are to continue cautiously for the remainder of the lap, and exit the track via pit lane. Passing after the Checkered Flag may be done if necessary; however, drivers must use caution.

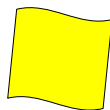


### C. Yellow Flag – Standing

1. Categories: Command, Advisory, Local
2. Description: A solid motionless yellow flag, displayed at any flag station found anywhere around the course.
3. Uses: This is used locally, to advise drivers that a hazard is close; and may be displayed at one or more of the flag stations just before reaching a Waving Yellow. Command: Drivers shall slow their vehicles in preparation for any evasive maneuvers that may be necessary to avoid a potential hazard. Absolutely NO PASSING is permitted from a point tangential to the first station displaying the yellow flag, until completely past the incident(s) and until such a point as the racer can visually confirm that the next manned flag station is in a green flag (that is, no flag) condition. [Note: If this flag is displayed to indicate a hazard on, or near the course, it may be rescinded after one or two laps even if the hazard remains (The hazard becomes part of the course.).]

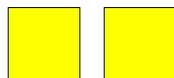


#### D. Yellow Flag – Waving



1. Categories: Command, Advisory, Local
2. Description: A solid waving yellow flag, displayed at a flag station found anywhere around the course.
3. Uses: This is used locally, to advise drivers that there is extreme danger in the immediate area. Command: Drivers shall significantly slow their cars in preparation for any necessary evasive maneuvers, or coming to a complete stop to avoid striking a potential hazard. NO PASSING is permitted from a point tangential to the first station displaying the yellow flag, until completely past the incident(s) and until such a point as the racer can visually confirm that the next manned flag station is in a green flag (that is, no flag) condition. [Note: If this flag is displayed to indicate a hazard on, or near the course, it may be rescinded after one or two laps even if the hazard remains (The hazard becomes part of the course).]

#### E. Full Course Yellow – Double Yellow Flags



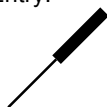
1. Categories: Command, Global
2. Description: One or two solid motionless yellow flags, displayed at every manned flag station around the course.
3. Uses: NO PASSING is permitted. This is used to indicate “a pace car condition.” This means that there might be a problem somewhere on the track. Leaders should slow to pace car speed. Trailing cars should also slow but drive at a brisk but safe speed until they've closed with the field. Drivers should be prepared to encounter a “local Yellow Flag” situation and/or a Pace Car (or a very slow moving pack behind the Pace Car). The displaying of Full Course Yellow – Double Yellow Flags does not guarantee the appearance of a Pace Car. It is a command that NO PASSING IS ALLOWED until either: 1) The Pace Car has pulled off the course (if applicable) AND the driver has passed the next manned flag station that is not displaying any Yellow Flag(s); or 2) the driver has passed the last manned flag station (displaying any yellow flags or not) AND the green flag is displayed at Start/Finish. Cars may carefully pass emergency vehicles. Cars may pass other cars that are disabled or cannot keep the pace as signified by driver raising an arm out of the window.
4. Under race conditions:
  - a. The pits are closed when the Full Course Yellow condition is declared.
    - (i) The pits will be reopened to each car once that car has passed the starter displaying the restart green flag.

(ii) Under the discretion of the event Competition Steward, the pit lane may be opened during full course yellow conditions, described under **F.3.J.1.e.**

- b. Cars in the pit lane when a Full Course Yellow condition is declared will be allowed to rejoin at the back of the field sequenced in the order they arrive at Re-Entry.

**F. Black Flag – Furled**

1. Categories: Advisory, Personal
2. Description: Solid black and “furled,” which means “rolled up” and pointed, or shaken, at an intended driver. It may be displayed at any location around the course, and is sometimes accompanied by a sign indicating the car number of the intended driver.
3. Uses: The furled black flag is advisory only. It is displayed to a particular driver as a warning from the Officials. This is done when the Officials have determined that a driver has committed a slight infraction, or is driving in a dangerous manner. It also means that if the infraction or dangerous driving occurs again, the driver may receive an “Open Black Flag.”



**G. Black Flag – Open**

1. Categories: Command, Personal
2. Description: Solid black and usually displayed motionless, although sometimes waived in special cases when needed. It is displayed from the Starter's stand, and whenever possible is accompanied by a sign indicating the car number of the intended driver. Note: This flag and the corresponding car number sign may also be displayed at another designated station on the course.
3. Uses: This is used to order (command) a particular driver to enter the pit lane the next time by. The driver will proceed immediately and directly to the “Black Flag Station” (located in pit lane). If there is no “Black Flag Station” present or specified, the driver will report to the Re-Entry Marshal, located at the head of the pit lane.
4. The Black Flag can only be displayed by order of the Competition Steward as relayed through Race Control.



**H. Black Flag All**

1. Categories: Command; Global
2. Description: A solid black flag will be displayed at all manned flag stations around the course. A sign with the word “ALL” will



accompany the black flag at the starter's stand and may also be shown at another designated station.

3. Uses: This means that the session has been stopped, drivers should slow their vehicles, and passing is prohibited. This is a command, displayed (globally) to all drivers, ordering them to proceed to the pit lane at a reduced speed. Drivers must be aware that they may encounter hazards somewhere on the course. The local Yellow Flags shall still be in effect where hazards exist. Under race conditions, cars must remain in the pit lane until released to resume competition under full course conditions. Under all other conditions, drivers may return to the paddock or they may choose to remain in the pit lane for further instructions.
4. The Black Flag can only be displayed by order of the Competition Steward as relayed through Race Control.

#### I. Red Flag



1. Categories: Command, Global
2. Description: A solid red flag will be displayed at all manned flag stations around the course. (Note: The Red Flag is meant to be used "Standing" (motionless); however, it may be waved at the drivers to indicate urgency.) Additionally, the Red Flag may be displayed at only one flag station.
3. Uses: This means that the session has been stopped. No passing is allowed, except in an emergency situation to avoid collision. This flag is a command, displayed (globally) to all drivers, ordering them to come to controlled stop on the side of the track; out of harm's way, and in view of the next manned flag station. If a driver is forced to stop in an unsafe location due to the position of the vehicle directly ahead of them, the driver may pull off course, pass that vehicle, or take whatever action necessary to protect them from perceived danger. The driver that chooses this option shall be held accountable for the decision. No penalties should be assessed for actions based solely on the claim of personal safety, as it pertains to this section.
4. Drivers must remain in their cars and be prepared to restart unless instructed otherwise by an official.
5. Resumption of a race will use a Pace Car positioned in front of the overall leader and the course will go to Full Course Yellow for a single file restart after the field has formed behind the Pace Car.
6. Resumption of other sessions will be signaled by a change to Full Course Yellow or Black Flag All.
7. **UNDER RACE CONDITIONS:**

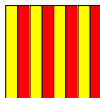
- a. The pits are closed when the Red Flag condition is declared.
    - (i) The pits will be reopened to each car once that car has passed the starter displaying the restart Green Flag.
  - b. No work may be performed on any car that was in the pit lane when the BLACK ALL/ RED FLAG condition was declared. Any work in progress when the BLACK ALL/ RED FLAG condition was declared must stop, including fueling.
  - c. The race clock and any pit-stop clocks stop when the RED FLAG condition is declared. The race clock and pit-stop clocks restart when the track goes to Full Course Yellow as the field reforms behind the Pace Car. The clock continues to run under BLACK ALL conditions.
  - d. Cars in the pit lane when a Red Flag condition is declared will be allowed to rejoin at the back of the field when the course goes to a Full Course Yellow condition sequenced in the order that they arrive at Re-Entry.
  - e. No work may be performed on any car that has stopped on course during the Red Flag condition, unless done by the course Officials or any crewmember with specific permission from the Competition Steward. Cars entering pit lane under BLACK ALL/ RED FLAG conditions may not start work nor may they exit pit lane to the paddock. Under BLACK ALL/ RED FLAG conditions, work may resume once the course has gone GREEN.
8. The Red Flag can only be ordered by the Competition Steward. The Red Flag may be requested by any on-scene emergency response personnel.

J. Passing Flag



1. Categories: Advisory, Personal
2. Description: A passing flag with a yellow diagonal stripe, which can be displayed from any manned flag station around the course. It may be displayed motionless, or in some cases waving.
3. Uses: This is a personal advisory to alert a particular driver that another vehicle is following very closely or closing rapidly, and may attempt a pass. The Passing Flag may be waved to indicate urgency because another car is closing in from behind at a high rate of speed.

K. Debris Flag/Surface Condition Flag



1. Categories: Advisory, Local



2. Description: A motionless flag with yellow and red vertical stripes that can be displayed from any manned flag station around the course.
3. Uses: This is a local condition advisory that indicates a slippery surface exists (such as oil), or debris may be present on the track surface. Caution is advised. [Note: If debris is large, heavy, in the racing line, and/or otherwise presents itself as a hazard that will cause significant damage to a car, a Yellow Flag may be used along with, or in place of, the Debris Flag]

L. White Flag – Standing

1. Categories: Advisory, Local
2. Description: A motionless solid white flag that can be displayed from any manned flag station around the course.
3. Uses: This is a local advisory flag alerting the driver that there is a slow moving vehicle on course. This is usually used to indicate another participant's vehicle is moving slowly. However, it could be used to indicate a safety vehicle on course (presumed to be driving slowly).



M. Mechanical Black Flag

1. Categories: Command, Advisory, Personal
2. Description: (also known as the "meatball" flag) A motionless black flag with an orange ball in center. It may be displayed at any location around the course, and is sometimes accompanied by a sign indicating the car number of the intended driver.
3. Uses: This is a command, displayed to a particular driver, advising them that there is something mechanically wrong with their car, and ordering them to reduce speed and to enter the pit lane at the next opportunity.



### 3. LIGHTS AND MEANINGS

A. Pace Car (with lights on)

The Pace Car may be dispatched in the middle of a session due to any number of causes; however, there is only one common purpose. The Pace Car functions to collect the field of cars and slow them to a pace deemed reasonable by Control, given the circumstances. When the Pace Car is on course, the drivers shall follow it at the same speed. Those not in sight of the pace car shall close up with the pack at the pace car. They should do this at a subdued race speed, being constantly aware of local flag conditions. Passing the Pace Car is not

allowed unless motioned to do so from the personnel in the Pace Car. The Pace Car may be different at each event, and may even use different lights. Do not confuse Safety Vehicles with a Pace Car. If a driver is unsure of what car/light combination is being used for that event, it is his responsibility to ask one of the Officials.

**B. Safety Car (with lights on)**

At most events a Safety Car is used for a wide variety of reasons. It is used to bring extra emergency personnel to a scene when needed. It could be the Medical Director or another Official. Regardless of its intended mission, the Safety Car, when driven on course with its lights on, shall be treated like every other safety vehicle. That is to say the drivers should expect to be alerted to its presence with the proper flags, and they are free to pass it with care. A Safety Car with its lights off may be treated like any other car.

**C. Tow, Safety, and Fire Trucks**

When a driver encounters a Tow, Safety, or Fire Truck on course, he or she may pass it with due care. Emergency Response Officials usually ride on the back of the trucks and signal the drivers approaching them with instructions. These instructions are three simple hand signals. One will be a point to the right, which indicates that the driver should pass on the right. It is the same for the left. The last one is a palm in the air directed straight at the driver. This is a signal to hold back on the pass for the moment. The Officials will signal the driver to pass as soon as possible when it is safe. If there are no Officials on the back, or none of them are signaling the driver, then the driver is free to pass, but with due care.

**D. Course Lights**

Course lights are not commonly used in road course events; however, there are some places on some tracks, and some night events that do use them. The general rule of thumb is that the color of the light has the same meaning as the corresponding flag. A blinking light is equivalent to a waving flag. A solid light is equivalent to a standing flag.

**4. SIGN BOARDS**

Signboards are simply another way of communicating to the drivers. Typically, signboards are displayed in the pit lane indicating five minutes, three minutes, and one minute before the start of the session. Each organization has their own set up signs for different reasons.

**5. LEADING VEHICLE PACE CAR**

During a Full Course Yellow condition, the driver in the overall lead is expected to slow down and essentially, function as a Pace Car, until such a time as a Pace Car can properly pick up the lead. To assist the leading driver in determining when he/she is expected to temporarily function as a pace car, the officials will advise when possible the drivers and crews who the overall lead car is on FRS channel 7, sub-channel 1.

# Appendix F

## Racing Rules

### 1. PIT STOP AND PIT LANE RULES

- A. The green flag and checkered flag cannot be taken in the pits unless the vehicle is experiencing a mechanical failure.
- B. The mandatory pit lane speed limit is 35 mph (in and out) for all tracks and events, unless the local track has a lower speed limit, in which case the lower speed limit will be in effect.
- C. When refueling is allowed in the hot pit, the car must have wheels stopped for a minimum of five minutes.
  - 1. Engines are to be off during fueling and the driver must be out of the car before fueling begins (fuel system is open or dry break is breached). Fueling ends when the fuel system is resealed.
  - 2. During fueling, no other work may be performed on the car.
  - 3. The fueler(s) and fireman shall wear full Nomex suits, Nomex gloves, balaclava and a full face Nomex lined helmet.
  - 4. Each team that refuels must have a fireman with a fire extinguisher with a minimum nominal capacity of 10 pounds and a minimum UL rating of 60B:C. Teams are responsible for providing their own fire extinguishers. The fireman will stand behind and back from the fueler during fueling (6 feet away) and will have NO OTHER DUTIES EXCEPT AS FIREMAN DURING FUELING. The fire extinguisher must be immediately dispensable; that is, any safety pin must be pulled during fueling and the nozzle must be aimed at the refueling point.
  - 5. No fuel container may be placed on the wall or on the ground in the hot pit. **FUEL SPILLS LARGER THAN 9 INCHES IN DIAMETER SHALL BE PENALIZED**; the first violation will result in a 5 minute stop and go penalty and the second violation will result in a 10 minute penalty, etc.
- D. All crew in the hot pits must wear long pants, a natural fiber shirt, socks, and shoes. Shoes must not be sandals or any another open-toed design. (The hot pits include the pit area adjacent to each side of the pit wall, usually marked with pit boxes).
- E. Only one crew member is permitted in the hot pit to signal the driver. A maximum of three (two fuelers and one fireman) are permitted in the hot pit during fueling. No more than six team members, including the driver(s), may be over the pit wall while the car is stationary before or

after fueling. No tools, equipment, tires or crew (except to signal driver) are permitted in the hot pit or on top of the wall until the car has come to a complete stop in its pit box.

- F. A car shall not be powered in reverse in the pit lane. Crews may push a car back into the pit box.
- G. No smoking is allowed in the hot or cold pits.
- H. No children under 16 years of age are allowed in the hot pits.
- I. Penalties
  - 1. Violations of pit lane rules are subject to penalties depending on the severity of the infraction and at the discretion of the Competition Steward. Such penalties may include stop-and-go, time, or lap penalties. The penalties below are designated as minimum penalties. Actual penalties may be more severe if, in the sole judgment of the Competition Steward, additional penalties are appropriate.
  - 2. Failure to meet the fueling safety requirements will result in a penalty of at least one lap. Severe disregard for safety requirements and procedures may result in disqualification.
  - 3. Exceeding pit lane speed limits will result in a mandatory stop-and-go penalty under green flag conditions. Additional time may be added to the stop at the Competition Steward's discretion if the violation is deemed particularly excessive.
  - 4. Working on the car during refueling or the driver being in the car during refueling is a minimum one-lap penalty.
  - 5. Too many crewmembers over the wall during a pit stop will result in a one-lap penalty.
  - 6. Violations during non-race sessions may be applied to the next point's race of the event.

## **2. DRIVER CHANGE RULES**

- A. Driver changes are allowed during pit stops in any session.
- B. Alternate drivers must be registered with the event and with Timing and Scoring for the entrant's results to be counted and to be eligible for drawings or points.
- C. Multiple-driver cars must register as such prior to the first on-track session. The registrant is responsible for providing the event Timing and Scoring Steward with the driver in the car PRIOR to the start of each session. Failure to properly notify the Timing and Scoring Steward PRIOR to a race will result in a penalty of disqualification for the car and

will also result in loss of all awarded points for that race. Similarly, failure to properly notify the Timing and Scoring Steward PRIOR to a qualifying session will result in the loss of the qualifying time and the car must start the race from the back of the grid. Failure to properly notify the Timing and Scoring Steward PRIOR to a practice session will be penalized as deemed appropriate by the Competition Steward.

- D. An unregistered and/or unlicensed (which includes being previously licensed but non-current) driver in the race car will result in immediate disqualification, expulsion of the race car, the entrant, and all drivers from the event and a 13/13 penalty up to and including suspension.
- E. All drivers of record who have driven at least 25% of the laps in a race during the event are eligible for event sponsor drawings. In the event of a shortened race, any registered driver who has not completed laps in the assigned car is not eligible for sponsor awards for that race.
- F. Rules concerning points for multiple driver vehicles are specified in the North American Points System appendix.

### **3. CHARACTERISTICS OF THE RACE**

#### **A. BMW CCA Club Racing event shall be organized as follows:**

- 1. Each properly registered driver will qualify for a starting position during the qualifying session. It shall be the car/driver combination that qualifies for a starting position within a declared class. Each car shall be officially qualified only if the qualifying time is achieved by the driver nominated to drive that car.
- 2. Any race car determined to be in violation of any rule or supplemental regulation will forfeit all timed qualifying laps accredited to that race car prior to such a determination.
- 3. During qualifying sessions, drivers not running at full qualifying pace should be prepared to give way to overtaking drivers. Any driver that either intentionally or unintentionally interferes with any other drivers' qualifying laps may be penalized.
- 4. During the course of any session, the stewards may direct that all competing cars or selected classes be impounded (for example, for weighing or compliance checks), those cars must remain in the hot pits if not on the track unless released by an official. Once the session has ended all or selected cars must then go directly to impound, as directed by an official. Cars that return to paddock area without permission of the Stewards are subject to penalty as determined by the stewards.

## **B. Starting grid order**

1. Grid ordering may vary over the course of an event.
  - a. Qualifying Session
    - (i) After the end of the qualifying sessions, the driver with the fastest single lap time will assume the pole position.
    - (ii) The remaining grid positions will be assigned in ascending time sequence using the drivers' single fastest lap times recorded in the qualifying session.
  - b. Qualifying Race
    - (i) The driver who finished first will assume the pole position.
    - (ii) The remaining grid positions will be assigned in ascending sequence using the drivers' finishing positions in the qualifying race.
  - c. Fast laps from a prior race
    - (i) The driver with the fastest single lap time in the designated race will assume the pole position.
    - (ii) The remaining grid positions will be assigned in ascending time sequence using the drivers' single fastest lap times recorded in the designated race.
  - d. A method announced by the Competition Steward at a drivers meeting.
2. Complete or partial inverting of grids may occur only when the race format provides for single car starts. Examples may include simple starting position inversions or Australian Pursuit (handicap) races.
3. The grid closes no later than five minutes prior to the scheduled start of the race. The Competition Steward keeps the official time.
  - a. Cars arriving on the grid after the grid closes forfeit their grid positions and will take positions at the back of the field in the order in which they arrive at the grid.
4. Unqualified car/driver combinations shall take positions at the back of the field in the order in which they arrive at the grid.

## **C. Rolling start**

1. Starts will normally be two abreast. The Competition Steward may direct a single file start based upon track conditions.
2. Prior to the cars leaving the grid, the pole sitter will determine the side of the track, left or right, he or she wishes to start from. When

the cars leave the grid, the pole sitter will assume or be directed to his choice of side. The remaining cars will move alternately to the opposite column of the car that they are behind, forming new rows as appropriate. As they are leaving the grid or entering the track, cars may be directed to their appropriate side by a grid worker.

3. When a pace car is employed, the Starter, Grid Marshal, or Competition Steward shall first signal the pace car to begin moving prior to releasing the field.
4. The pace car shall set the pace. If a pace car is not utilized, or an extra pace lap is required, the pole position car will serve the same function as a pace car from his position on the front row.
5. At least one pace lap is to be run. Pace lap speed will be considerably slower than racing speed.
6. Drivers should take care when weaving to warm up tires (also known as "scrubbing tires").
7. During the pace lap the field shall align into its proper starting columns and rows. The field should come into perfect alignment in the last two turns before the start/finish line.
  - a. A car that fails to maintain its relative position during the pace lap forfeits its grid position. There will be no empty grid positions.
  - b. A car that fails to maintain its relative grid position during the pace lap may rejoin at the rear of the field.
8. The pole position car, as well as the balance of the field, must maintain the speed of the pace car (including once it has left the track in anticipation of the green flag).

#### **D. Start Signal**

1. The starter, upon determining that the approaching field is at a constant and appropriate slow speed, with cars at close intervals and well-aligned, and with the field close enough to the starter that all drivers can see the flag, the starter will suddenly and continuously wave the green flag until all cars have passed the start line.
  - a. No Start
    - (i) Should the starter determine that the field is not in good order, he shall abort the start by making no flag movements whatsoever, at the same time vigorously shaking his head from side to side to signal all drivers that there has not been a start.



- (ii) Drivers shall continue on another pace lap in their original starting positions. All flag stations shall display double yellow flags during all such pace laps.
  - (iii) Such additional pace laps WILL count towards race distance or time.
- b. False Start
  - (i) A false start shall be when a driver accelerates prior to the green flag, or moves out of position prior to the start of the race, or moves out of position prior to a restart of the race.
  - (ii) Should it be determined that, in the opinion of the Competition Steward, a false start has occurred and the race has either started or restarted, that driver will be black flagged for a stop-and-go penalty. Other penalties, should they be deemed necessary, may be assessed.

## **E. Restart Procedure**

1. Following the use of the pace car during a Full Course Yellow condition, the race leader, as well as the balance of the field, must maintain the speed of the pace car (including once it has left the track in anticipation of the green flag).
2. All cars must remain in single file order with no large gaps. If the starter is satisfied that the field is aligned and in order, he will display a green flag and racing will resume throughout the field. Once the green flag is displayed, racing has resumed and passing is allowed.

## **F. Race Length**

1. The race length may vary at each event. It is the competitor's responsibility to ascertain the race length by information from the officials.
2. A race may be shortened or stopped at the discretion of the Competition Steward.
3. If a race is stopped with less than 50% of the total specified time (or total specified distance, when applicable) completed by the overall leader, and the race is not restarted, it shall be deemed an incomplete race. An incomplete race will be not counted, and no points or prizes will be awarded.
4. If a race is stopped after the overall leader has completed at least 50% of the total specified time (or total specified distance, as applicable), and the race is not restarted, the race shall be deemed completed.

5. A shortened but complete race shall be scored at the finish line, in order of the last lap before the Red Flag or Black Flag All condition was displayed; however, there is an exception. The race will be scored in order of actual finish if the race was under a Full Course Yellow condition, even if a Red Flag or Black Flag All condition ended the race, so long as the Full Course Yellow was displayed before the other aforementioned global flags were displayed.

#### **G. Race Starter**

1. To be considered as having started a race, a driver must cross the starting line under "green" track conditions, with a car under its own power, at some time during the race, and before the checkered flag is displayed.

#### **H. Race Finisher**

1. To be considered a finisher, a race car must complete at least half the distance covered by the overall winner of the race. If the race is an uneven number of laps, that distance will be determined by dividing the overall winner's laps by two and rounding down to the nearest integer. In cases of races of 55 minutes or longer in duration the Competition Steward may exercise his discretion in determining an appropriate number of laps a car must complete to be considered as a finisher. The Steward should consider the race length and disparity in class speeds between the overall winner and the race car(s) in question, and the number of laps should reflect what the race car would be capable of running at reasonable speed over the length of the race. The official results must specifically state that the Competition Steward has exercised this option and specify the applicable cars.

#### **I. Rules Under Other-Than-Green Flag Racing**

1. Passing under a yellow flag, ignoring a black flag, or other such situations will be penalized at the Competition Steward's discretion. Typically, a stop-and-go penalty would be assigned during the race under green flag conditions. Time or lap penalties would normally be assessed in the case of last-lap infractions multiple infractions, or if the infraction wasn't communicated to the Competition Steward in time to invoke a stop-and-go penalty prior to the end of the race. However, the Competition Steward has final discretion and may use any or all of the penalties at his disposal, including disqualification.
2. No passing is allowed from a point tangential to the first station displaying a yellow flag until safely past the incident AND until such point as the racer can visually confirm that the next staffed corner station is in a green-flag (that is, no flag) condition. This last item is

important, and is intended to preclude the possibility of passing when multiple incidents exist on the same section of track.

- a. Should a racer make an incorrect pass under yellow, he may slow and wave back by the car(s) that he or she incorrectly passed. The Competition Steward's judgment prevails regarding penalties in this situation, and he retains full authority in determining whether a penalty is appropriate regardless of any effort on the part of the offending driver to correct the error. The emphasis is on driver awareness and proper procedure rather than correction of errors.
3. Restarts – The Competition Steward will delay a restart, if necessary, to give those cars separated from the field a reasonable opportunity to rejoin the field. However, at the Steward's discretion if the separated cars are not making good time to rejoin, or for other reasons, the race may be restarted without the full field being rejoined.
    - a. All restarts from a Full Course Yellow must be accomplished in single file order with a pace car, if available. When practical, the Competition Steward will direct the starter to signal a "one lap signal with a furled white flag and a forefinger clearly displayed.

## **J. Enduro Rules**

### **1. General**

- a. An endurance race or "enduro" is defined as a race with a scheduled duration of 60 minutes or more.
- b. For endurance races, the minimum prepared class weight shall be measured with the lightest of all drivers who compete in the car.(prepared=vehicle's race status, Prepared = car class)
- c. Under normal circumstances, the driver who qualifies the race car must start the endurance race, or the car must start from the back of the grid. Any change in the car or driver from the qualifying combination requires that car to start at the back of the grid.
- d. If the grid for the endurance race is scheduled to be set by finishing position from an earlier sprint race in lieu of a qualifying session, the driver who drove the sprint race must start the endurance race, or the car must start from the back of the grid. Any change in the car or driver from the qualifying race combination requires that car to start at the back of the grid. In unusual circumstances (such as the unforeseen cancellation of a qualifying session or race) the starting drivers

or starting grid order may be changed or overridden by the Competition Steward due to an event's special requirements.

- e. Endurance races of less than 90 minutes scheduled duration are required to have one pit stop. Endurance races of 90 minutes or more are required to have one additional pit stop for every 45 minutes of scheduled duration (for example, a 120-minute enduro is required to have two pit stops and a 150-minute enduro is required to have three pit stops). All mandatory pit stops must be timed as wheels stopped for five minutes. Each team is responsible for timing its own stop. Organizers may have additional personnel timing stops, but they are not obligated to provide timing for competitors. **NOTE:** At the discretion of the event race chair/ organizers, the requirement for mandatory stops, including mandatory 5 minute stops, may be totally eliminated or may be amended to a specific format designated by the race chair/ organizers. If one of these options is chosen, the decision and format **should** be posted at the time that the event is posted on the Club Racing Calendar and **MUST** be posted at the time that event registration opens. In the event that mandatory pit stops are eliminated or amended, the Competition Steward may elect to open the pit lane under full course yellow conditions once the field is under the control of the pace car. The decision to open pit lane under full course yellow conditions will be announced at the first driver's meeting of the event and the method to be used to inform drivers/ crews of the opening of pit lane (radio, flagging, etc.) will also be announced at the first driver's meeting. All other pit lane/ fueling rules will remain in effect.
- f. A driver change is mandatory for any enduro with a scheduled duration of more than 120 minutes.
- g. Additional stops during the race are allowed but will not be counted towards the mandatory pit stop requirement if they are shorter than the five minute, wheels-stopped minimum.
- h. The green flag and checkered flag cannot be taken in the pits unless the vehicle is experiencing a mechanical failure.
- i. A mandatory pit stop may not be started prior to the car's completion of its first full lap after the start of the race, except as noted below in the Mechanical Black Flag item.
- j. A mandatory pit stop must be started prior to the point in time where 10 minutes remains in the scheduled race length. At that point the pits will be closed except for safety-related stops. The

stop officially begins when the car comes to a complete stop in the assigned pit.

- k. No pitting is allowed under a Full Course Yellow condition except for mechanical or safety issues. Should this be necessary, only the particular mechanical or safety issue(s) may be addressed. Such a safety pit stop may NOT be used to fulfill mandatory pit stop requirements. Refueling and/or driver changes are specifically prohibited. A race car that makes a “safety” pit stop under Full Course Yellow shall be placed at the back of the field for the restart. If a race car is already in the pits when a Full Course Yellow condition is declared, that race car’s pit stop may be continued and may be applied to any mandatory pit stop requirements. Any such race car may re-enter the track and rejoin the field when it can be safely accomplished.
- l. Failure to make a mandatory pit stop will result in a time penalty equal to the time of the minimum pit stop (five minutes) plus pit lane transit time (including entry and exit time) plus an additional two minutes. In the event of multiple required pit stops, the penalty will be applied for each missed pit stop. The penalty will be applied separately for each mandatory stop that is missed.
- m. Pitting outside the allowable pit stop window will result in a one-lap penalty.
- n. All time penalties applied during a stop-and-go penalty will be under green flag racing conditions and may not be considered part of any mandatory pit stop.
- o. If a race is prematurely ended under Black Flag All or Red Flag track conditions, no penalty or time assessment shall be assigned to those cars that were in the pits when the track condition was declared. Similarly, those race cars that had not yet pitted prior to the track condition being declared shall not be assigned a penalty or time assessment. Racers are reminded that the decision when to pit is theirs. Any advantage or disadvantage associated with that decision is borne strictly by the racer. Timing and Scoring will consider the order of entry of on-track race cars into pit lane as to be that of the running order for the last scored lap, subject to adjustment for any improper passes executed under the Red Flag condition.

#### **K. Red Flag Conditions**

- 1. Cars may NOT begin or continue their mandatory five-minute pit stop under a Red Flag track condition. If a race car has already

entered the hot pit lane when the Red Flag condition is declared, no pit activity may begin and ALL pit stop activity already in progress must immediately cease (no service, no driver changes, no repairs, etc.). Pit stop activity for race cars already in the pits can resume when the Red Flag condition returns to Full Course Yellow (that is, when the cars begin to return to the course for a restart). Race cars that were in the pits when the Red Flag condition was declared may not exit their assigned pit until all other race cars that were on track have reentered the track for the restart. All race cars that were on the track when the Red Flag was declared will be placed back onto the track first, followed by race cars from the hot pit lane in the order in which they arrived in hot pit lane.

#### **4. On Course Driver Conduct**

- A.** It is the driver's responsibility to avoid contact between cars on the race track.
- B.** Each competitor has a right to racing room, which is generally defined as sufficient space on the marked racing surface that under racing conditions, a driver can maintain control of his car in close quarters.
- C.** Drivers must respect the right of other competitors to racing room. Abrupt changes in direction that impede or affect the path of another car attempting to overtake or pass may be interpreted as an effort to deprive a fellow competitor of the right to racing room.
- D.** The overtaking driver is responsible for the decision to pass another car and to accomplish it safely. The overtaken driver is responsible to be aware that he is being passed and not to impede or block the overtaking car. A driver who does not use his rear view mirror or who appears to be blocking another car attempting to pass may be black flagged and/or penalized.

# **Appendix G**

## **North American Points System**

### **1. INTRODUCTORY COMMENTS**

- A. The BMW CCA Club Racing Points System is intended to reward driving performance and is therefore scored based on a driver's in-class finishing position rather than overall finishing position. The purpose of the system is to place the emphasis on in-class performance and to widen the scope of the Club Racing program with FRIENDLY and SAFE competition at BMW CCA Club Racing events that encourages drivers to compete beyond typical geographic boundaries. Safety is, and will always remain, the first priority of Club Racing.

### **2. PROGRAM STRUCTURE AND SANCTIONING**

- A. BMW CCA Club Racing is the only authority for awarding BMW CCA Club Racing points and the naming of series champions, both regional and North American. BMW CCA Club Racing retains the authority for naming, titling, and determining any and all sponsors for the BMW CCA Club Racing Series.
- B. All points awarded in the series shall be awarded to the driver on the basis of technical class of the race car used in competition as defined in the BMW CCA Club Racing rules (for example, D Modified or J Stock). All classes so defined will be eligible for points.
  - 1. Points earned in one class may not be transferred to another class.
  - 2. Drivers may compete in more than one class.
  - 3. Drivers may earn points in more than one race car within a class, but may not earn points in more than one race car in a given class in any particular race.
- C. Points shall only be awarded in races sanctioned by BMW CCA Club Racing. Sanctioned races may be run in cooperation with other venues. All sanctioned races will be posted on the schedule on the BMW CCA Club Racing Web site.
- D. Should an increase in the incident rate be attributable to this points system, the system may be altered at any time in any fashion or terminated at any time at the sole discretion of BMW CCA Club Racing. BMW CCA Club Racing assumes no responsibility or liability for any modifications to, or termination of, the BMW CCA Club Racing Points System at any time.

- E. Prizes other than trophies may be awarded as long as all participating, qualified racers have an equal opportunity to win. Contingency sponsors may specifically elect to award prizes based on finishing positions.

### **3. TYPES OF EVENTS**

- A. There are four different types of events that are sanctioned by BMW CCA Club Racing. Each event shall have a race that is designated as the Feature Race, the results of which shall be used to determine BMW CCA Club Racing prizes, gifts, or awards. Promoter-provided prizes, gifts, or awards may be awarded at the promoter's discretion regardless of race designation.
  - 1. Regular Events. Regular BMW CCA Club Racing events are limited to three points races, where points will be awarded based on the calculations described in the Finishing Position Points section for two races, and at 150% for the designated Feature Race. The event organizers shall designate in the registration materials which of the three races will be designated the Feature race.
  - 2. North American Challenge (NAC) Races. The system provides for one or more special annual events, which are designated as the "BMW CCA Club Racing North American Challenge Races." In those events, up to four races may be conducted, three of which will be worth 150% position points and one worth 100% position points. Events receive the designation of the "North American Challenge Race" solely at the discretion of the Club Racing Chairman. The location and date of the BMW CCA Club Racing North American Challenge Races shall be announced with the initial official release of the season's schedule or as soon as possible thereafter. The location of the North American Challenge Races shall not be duplicated two years in succession, subject to track availability, and will be determined by the Chairman of BMW CCA Club Racing with the advice of the RAC.
  - 3. Premier Events. Each region has the opportunity to host a single "Premier" event per year. In Premier events, up to four points races are allowed, with one race being designated in advance as the Feature Race. The Feature Race and one additional race will be worth 150% position points. The two remaining races will be worth 100% points. The regional RAC representative determines which race event is designated "Regional Premier Race" solely at the discretion of the RAC representative of that region.
  - 4. National Events. At the discretion of the Club Racing Chairman, any event may be designated a "National" event. Any event receiving the National Event designation will be in addition to the region's allotted Premier event. In National events, up to four points races are allowed, with one race being designated in advance as



the Feature Race. The Feature Race will be worth 200% position points, two races will be worth 150% position points and the remaining race worth 100% position points.

- B. Under unusual circumstances, such as bad weather, event organizers in concert with the assigned Competition Steward may re-designate the Feature Race at an event. In such cases, the re-designation must be made prior to the first point's race of the event and drivers must be informed as soon as possible.

#### **4. POINTS AND PENALTY CALCULATIONS**

- A. Points will be awarded to eligible racers as follows:
  - 1. All points for an event are awarded in the region where the BMW CCA chapter sponsoring the event is located, except for Premier, National, and North American Challenge events. In those cases, the points will be awarded in both the driver's home region and the region where the BMW CCA chapter sponsoring the event is located.
  - 2. Event Participation Points
    - a. Event Participation Points may be awarded to each driver who competes in at least one race in an event.
    - b. The Event Participation Points will be applied to the race in which the racer earns the most number of points under Section 4.A.3 thru 4.A.5.
    - c. Five Event Participation Points will be awarded to every racer who takes a green flag in any race within a particular event. For endurance races, each non-starting driver who completes at least 25% of the race car's laps in an endurance race will also be awarded five Event Participation Points. All non-starting drivers are responsible for confirming their lap participation with the event Timing and Scoring Steward within 20 minutes of the end of the race. Failure to do so will nullify any claim to these Event Participation Points. For this purpose, an endurance race is defined as a race with a minimum announced length of 45 minutes or longer AND a mandatory pit stop.
    - d. A maximum of five Event Participation Points will be awarded to any one driver in any one class under Section 4.A.2. Drivers who participate in more than one class during the event are eligible for Event Participation Points in each class so long as they qualify under Section 4.A.2.

- e. For purposes of calculating a driver's championship points total in a given class, no driver can accumulate more than 25 Event Participation Points.
- 3. **Finishing Position Points.** Points will also be awarded by finishing position in announced points-eligible races, in each competing class, as follows: 1st = 10; 2nd = 7; 3rd = 5; 4th = 4; 5th = 3; 6th = 2; 7th = 1. For endurance races held at National, Premier, and North American Challenge events as defined in Section 3, the appropriate multiplier will affect the Finishing Position Points only.
- 4. **Bonus Points.** Each racer that finishes a race will be awarded a bonus of one additional point for each car in class that officially finishes the race behind each points-winning position, up to a maximum of 10 bonus points per race. (For example, one car finishes in class- NO bonus points; 2 cars finish class- the winner gets one point and second none; 20 cars finish in class-the winner gets 10 points and from the 11th place car and down there are NO points. The only way the maximum of 10 points is awarded is if 11 cars finish). Did Not Finish (DNF) and Did Not Start (DNS) results do NOT count for purposes of the bonus point's calculation. Bonus points are NOT eligible for a multiplier for Feature Races or races held at National, Premier, and North American Challenge events as described in Section 3.
- 5. **Position Points Multipliers.** Finishing Position Points for a given race may be multiplied by 150% in the following situations:
  - a. **Feature Races.** One race at each event will be deemed the Feature Race. The Feature Race may be a sprint or an enduro. Feature Races shall have Finishing Position Points awarded at 150% of the standard values. Should the Feature Race already have a position points multiplier in effect (as a National, Premier, or North American Challenge event), then no additional points multiplier is to be added above that level.
  - b. **North American Challenge Race.** A NAC event shall have Finishing Position Points awarded at 150% of the standard for up to three races and 100% for one additional race.
    - (i) A driver may accumulate points in class from only one NAC event per calendar year. If a driver competes in more than one NAC event in the calendar year, the one that produces the highest total points shall be used.
  - c. **Premier Events.** Premier events shall have Finishing Position Points awarded at 150% of the standard values for up to two races, and may hold two additional races where Finishing Position Points are awarded at 100% of the standard values.

- d. National Events. National Events shall have Finishing Position Points awarded at 200% of the standard values for a designated Feature Race, 150% of the standard values two additional races and 100% for a fourth race.
  - e. If these multipliers result in non-integral Finishing Position Points, they shall be awarded as calculated including half points (NOT ROUNDED UP).
- 6. If a driver competes in a given class within an endurance race by sharing driving in two or more race cars in that class, he must declare prior to the start of the race which race car will be used for earning points. A driver cannot earn points in a given class in more than one race car in that class in a single race. This declaration must be made in writing to the Timing and Scoring Steward at least one hour prior to the start of the endurance race. Failure to do so will result in the forfeit of all points earned in that race.
  - 7. In the case of a dead heat for any position, the total points involved based on the number tied at the finish shall be divided evenly among those tied. (Example: If the dead heat is for second place involving two cars, the points from second and third will be added together and divided by two to obtain the points to be awarded for second place. Each driver would be awarded 17 points. There would be no third place points awarded in that race.)
  - 8. BMW CCA Club Racing may, at its sole discretion, and with the concurrence of a majority of the RAC representatives, award additional finishing position bonus points at a sanctioned event that is the first club race sponsored by any BMW CCA chapter or an event that is held at a track at which there has not been a BMW CCA Club Racing event in two or more years. This designation and the specific level of bonus points to be awarded must be approved prior to the distribution of registration materials for the event. In no case shall such bonus points be more than 100% of the normal Finishing Position Points nor apply to more than two races within the event.
  - 9. If a racer's race car is reclassified during the season as a result of a mid-season rules change, the points will be carried over with the car to the newly assigned class without penalty. If the race car has mid-season alterations that mandate a class change, no points will be transferred to the new class. If the race car is reclassified as a result of technical violations, all points won in the class in which the car was non-compliant will be forfeited and a point's penalty, under Section 4.B.3, may be applied.
- B. Penalties will be assigned to racers as follows:

1. Any driver issued a 13/13 penalty (of any duration) will:
  - a. Forfeit ALL points earned in all races at that event, and
  - b. At the discretion of the Competition Steward, be penalized up to 20 points against his or her National Best Points in addition to the forfeited points.
    - (i) Penalty applies to the driver's accumulated regional and national season points in the class for which the points would have been awarded. Premier, National, and North American Challenge events distribute points to multiple regions therefore the host region and the home region class points are affected for those type events.
2. Any driver issued a disqualification (DQ) for any race (fun or points) will forfeit ALL points earned at that event.
3. The Competition Steward may apply up to 20 penalty points to any racer if his conduct or that of a crew member or affiliate, on or off the track, is not within the stated philosophy of BMW CCA Club Racing. Any such penalty may be appealed through the normal BMW CCA Club Racing appeals procedure.
4. Points penalties are in addition to the standard application of the 13/13 rule.

## **5. NORTH AMERICAN AND REGIONAL CHAMPIONS**

### **A. North American Champions**

1. Each BMW CCA Club Racing class for which at least one race car in that class was declared a finisher at a minimum of four sanctioned events during the calendar year shall have a North American Champion designated.
2. The North American Class Champion shall be the racer with the most total points, after any applicable penalties, within a given class subject to the limitation of twelve countable races as per Section 5.A.3.
3. Twelve Best Races. For the purposes of determining a North American Champion, each driver will have his point total calculated using a maximum of twelve races in which he or she has scored points. If the driver has competed in more than twelve races, the twelve races that produced the highest total in any region shall be used. If the driver has competed in more than one class, he will have separate points totals calculated for each class. Points awarded in a given class cannot be considered in any other class.

4. To be eligible for a North American Class Championship, a racer must have completed a race in a minimum of four events in class during the season.
  5. Ties in the final North American Championship points shall be resolved based on each driver's grand total of season points. If two or more drivers still remain tied, the driver with the most first place finishes among the twelve races used in determining the points total will be declared as the North American Champion. If two or more drivers remain tied at that point, they shall be considered tied for the championship and be designated North American Co-Champions.
  6. Trophies or plaques will be awarded for the 1st, 2nd, and 3rd place champions in each class that meets the minimum participation requirements, so long as all the winners have satisfied the minimum participation requirements.
- B. Regional Champions
1. Each BMW CCA region shall have a Regional Champion designated for each declared class of race car in which at least one race car in that class was declared a finisher at a minimum of four sanctioned races within that region.
    - a. BMW's with a declared class from another sanctioning body are eligible for Regional Championships.
  2. The Regional Champion for each class shall be the racer with the most total points in that region, after any applicable penalties, within the class subject to the limitation of twelve countable races as per Section 5.B.3.
  3. Twelve best races. For the purposes of determining a Regional Champion, each driver will have his point total calculated using a maximum of twelve races in which he or she has scored points. If the driver has competed in more than twelve races, the twelve races that produced the highest total in the racer's home region shall be used. If the driver has competed in more than one class, he will have separate points totals calculated for each class. Points awarded in a given class cannot be considered in any other class.
  4. To be eligible for a Regional Championship, a racer must have completed a race in a minimum of three events in class during the season that count towards his home region points total per Section 9.
  5. Ties in the final Regional Championship points shall be resolved based on each driver's grand total of season points. If two or more drivers still remain tied, the driver with the most first place finishes

among the twelve races used in determining the regional points total will be declared as the Regional Champion. If two or more drivers remain tied at that point, they shall be considered tied for the championship and be designated Regional Co-Champions.

6. Trophies or plaques will be awarded for 1st place champions in each class that meets the minimum participation requirements for a given region, so long as the winner has satisfied the minimum participation requirements.
7. No driver may be awarded a Regional Championship in more than one region in any given class. This does not preclude a driver from winning a Regional Championship in one class in one region and in another class in another region. If a driver finishes first in points in more than one region in a given class, his Regional Championship shall first be awarded in his BMW CCA region of record. If neither Regional Championship is in his home region, the region in which he earned the most points will be the title region. If the point totals are the same, then the region in which he started the most races will be the title region. In the event that the number of starts is also the same in both regions, a flip of a coin will be used to select the title region.

# Appendix H

## Racing Glossary

NOTE: Should any of the definitions contained in this Glossary appear to be in conflict with a specific rule, the specific rule will take precedence.

**A-Pillar** – The forward most roof support in a passenger car, which also serves as the side support for the windshield.

**Accelerator Pedal** – A foot-operated device that allows the driver to vary the degree of opening of the induction system throttle(s).

**Accessible** – Capable of being reached without removal of other components.

**Accumulator** – A pressurized free-piston device, in which the compression of a fixed volume of air by the piston, upon the application of a force caused by fluid under pressure, provides a pressurized reservoir of the fluid.

**Active Suspension** – Automatic ride height and/or roll control by an active system receiving power from a pump or compressor.

**Adhesive** – A bonding agent designed to cause two or more components to adhere to each other without fusing them into a single component.

**Adjustable Timing (Cam) Gear** – A camshaft drive gear or sprocket that permits a range of angular adjustment of the outer portion relative to the attachment point of the driven camshaft.

**Advance Curve** – The degrees of distributor advance from the static setting as a function of rotational speed, usually achieved by a system of rotating weights, springs, and limit stops within the distributor body.

**Advance Plate** – The plate inside a distributor on which the ignition points are mounted, which is free to rotate over a prescribed angle in response to the actions of the advance mechanism(s), thus altering the phase relationship of the points and distributor cam.

**Advance Springs** – Springs that provide the restoring force against the actions of the advance mechanism(s) in a distributor.

**Aerodynamic Device** – An attachment to, or an integral part of, a car intended to generate atmospheric downforce by the action of air flowing through or around the attachment.

**Aerodynamic Skirts** – Body panels, movable or fixed, at the bottom of the sides of a car's body, which aid in the creation of "ground effects" downforce by ensuring that little air passing under the car can escape at the sides.

**Aeroquip Line** – A brand name, used generically, for a braided metal-covered hose.

**Air Cleaner (Filter)** – An induction system component intended to filter particulate matter from the incoming air.

**Air Dam** – An aerodynamic piece that attaches to the underside of the bumper or bumper cover, intended to divert some of the air that would normally pass under the car when the car is in motion (for example, E30 chassis cars other than the M3 have a bumper cover and the lower part is an air dam. They are not one piece as in the E30 M3 or E36 chassis cars).

**Air Horn** – See Velocity Stack.

**Air Pump** – An engine-driven pump intended to provide a supply of air (without fuel) to the engine to assist in the reduction of pollution components.

**Air Throttle** – The valve that allows the driver to modulate the volume of air passing into a fuel injection induction system.

**Airfoil** – An aerodynamic device or part of a car whereby the flow of air over its surface will generate a vertical force by creating a pressure differential between top and bottom surfaces.

**Alter (verb)** – To change a component by modifying.

**Alternator** – A component intended to generate current with which to maintain a proper level of charge in the on-board storage battery.

**AN Coupler** – A threaded high pressure hydraulic coupling of the type normally used with metal braided hose.

**Annular Discharge** – A carburetor type in which the fuel is introduced into the flowing air from an annulus on the periphery of the main duct.

**Anti-Roll Bar (Sway bar)** – A torsion control device connected to a car's structure and to moving portions of the suspension, which is intended to control body roll. (Some types of anti-roll bars may also serve as a suspension component.)

**Anti-Submarine Strap** – A safety strap intended to provide additional support against motions of the driver's lower torso in the forward direction.

**Aspect Ratio** – The ratio of tire section height to section width, expressed as a percentage.



**Attachment Points (Suspension)** – The locations at which the fixed and moving ends of a shock absorber are mounted and/or the location of the suspension component on the frame or structure of a car.

**Automatic Transmission** – A transmission that is capable of allowing a car to start from a stop without use of a clutch, which may be shifted from gear to gear without use of a clutch, and in which such shifting of gears is accomplished by hydraulic, pneumatic, or electric actuation.

**Automobile** – See Car.

**Axle Housing** – The housing that contains axle shafts and may provide support for wheel hubs.

**Axle Shaft** – A shaft whose purpose is to carry rotational drive from a differential or transaxle to the driven wheels, or simply, to support one or two non-driven wheel hub(s).

**Backing Plate** – A braking component used in drum type brake systems, generally to support the brake shoes and wheel cylinder(s) at a wheel. On a disc brake system this is referred to as a dust shield.

**Baffle** – A plate or panel in a fluid container, which is designed to inhibit the rapid transfer of the fluid within the container when it is subject to changing dynamic forces.

**Balance (Verb)** – To minimize the dynamic off-axis forces of rotating components, or to equalize the weights of like reciprocating components.

**Balance Pipe** – A tubular induction system component that connects two or more independent branches of the system.

**Ball Joint** – A bearing coupling, generally in suspension or steering systems, consisting of two mating surfaces, one convex and one concave, which permits a range of angular displacements of the two attached shafts over a prescribed range.

**Ballast** – Non-functional mass fastened inside a car to increase the weight of the car.

**Base Circle** – The constant radius portion of a camshaft lobe that is closest to the centerline of the camshaft.

**Battery (Storage)** – An on-board electrical storage component that may be used to activate electrical devices or systems, such as starter, ignition, etc.

**Battery Box** – A covered container for an on-board storage battery.

**Bearing** – A mechanical component provided to allow connected parts to move with respect to one another in a manner consistent with durability and minimal friction.

**Bearing Carrier** – A housing in which the bearings carrying a shaft are mounted.

**Bell Housing** – A nominally bell-shaped extension or attachment to the engine or transmission that serves as a coupler between these assemblies, and usually encloses the clutch/flywheel assembly.

**Bezel/Rim** – Outer trim components that determine the assembled appearance.

**Bias Ply Construction** – A tire construction in which the structural plies of the main carcass form an angle considerably greater than zero relative to a cross section of the tire.

**Big End** – The crankshaft end of a connecting rod.

**Blanking Sleeve** – A replacement for a thermostat designed to divert the flow of cooling water away from the cooling system bypass circuit.

**Block** – The elemental component of a reciprocating engine that contains at least the cylinder location(s) and the crankshaft mounting points.

**Blueprinting** – The practice of engine improvement achieved by the use of selected standard parts and/or by optimizing the factory machined surfaces of stock engine components to achieve the most advantageous specifications within the normal range as defined by the manufacturer for that engine.

Within the above definition of blueprinting, any procedures that involve the following are not permitted unless specifically authorized:

- A. The addition of material of any kind to any component (this includes, but is not limited to, the addition of sleeves/bushings and the application of anti-friction, oil shedding and thermal barrier/retention coatings).
- B. The machining, tooling or any other physical or chemical modification (including shot blasting) of any surface that was not originally a factory machined surface. Glass or other media blasting for cleaning purposes only is allowed as long as it does not remove or modify the base material of the original part.
- C. Mixing/matching of parts from any other year, make, model or type of vehicle or engine.
- D. Balancing procedures that involve spot machining of all rotating and/or reciprocating parts (i.e. one rod/piston assembly must remain untouched).
- E. Note: Under no circumstances may any factory specification be exceeded as a result of any permitted blueprinting operation(s) (i.e. compression ratio, valve lift, bore, stroke, etc.).

**Body** – All parts of the car licked by the air stream and situated above the belly pan/floor with exception of the roll bar or cage.

**Body Panel** – A replaceable section of the body.

**Bodywork** – See Body.

**Bolt Pattern** – The arrangement of bolts or other fasteners used to join two components.

**Boost** – The degree of induction pressurizing in a turbo/supercharged engine.

**Boot Cover** – A cover for the area behind the driver/passenger seating area in an open car.

**Bore** – The diameter of a cylinder.

**Boss** – A protrusion from a casting or forging that provides the surface(s) and/or structure necessary to accomplish particular function of the component.

**Brake Light** – A signaling light mounted on the rear of the car, which may be actuated only by driver braking actions.

**Brake Lining/Pad** – Replaceable friction material that accomplishes braking action by making rubbing contact with the brake drum or rotor.

**Brake Rotor** – The disc component of a braking system, which is attached to a wheel hub and provides a friction surface for braking actions.

**Braking System** – A system, including hydraulic and mechanical components, which allows the driver to reduce the velocity of a car.

**Breather Vent** – An aperture that allows the flow of air into or out of an enclosure.

**Bulb** – A lighting system component that contains the actual light emitting element(s).

**Bulkhead** – A partition separating compartments.

**Bump Steer** – The change in toe-in or toe-out that results from changes in suspension geometry as the wheel(s) rises or falls from its neutral position.

**Bump Stop** – A cushioning pad that acts as the limit to suspension travel in one vertical direction.

**Bumper** – A semi-rigid attachment to the structure of a car at the front or rear, which is intended to absorb a portion of low speed front or rear collision forces.

**Bushing/Bush** – A sleeve or tubular insert, the purpose of which is to reduce the dimension(s) of an existing hole. A protective liner that cushions noise, friction, or movement such as a rod end or spherical bearing.

**C-Pillar** – The body roof support bordering on the rear window or hatch.

**Caliper** – A braking system component that is the disc brake equivalent of a wheel cylinder, and converts hydraulic pressure into mechanical braking force at a wheel.

**Cam Carrier** – That portion of a reciprocating engine that contains the supporting bearings for an overhead camshaft.

**Cam Cover** – Equivalent to a valve cover in an engine with an overhead cam.

**Camber** – The angle of a wheel relative to true vertical. Negative camber implies that the top of the wheel is closer than the bottom to the car's centerline.

**Camber Compensator** – A wheel location device designed to control the wheel camber under varying conditions of bump/rebound.

**Camshaft** – An engine component, driven by the crankshaft, the function of which is to actuate the valves, and often, to drive other engine components.

**Camshaft Timing** – The phase relationship of the camshaft to the crankshaft, which determines when in the crankshaft cycle the valves will open.

**Canard** – A near-horizontal aerodynamic device normally mounted at the extreme front of a (race) car.

**Car** – A self-propelled land vehicle running on four wheels, not in a line, which shall be in contact with the ground. At least two wheels shall affect the steering and at least two the propulsion.

**Carburetor** – The component of a non-fuel injection induction system that achieves the mixing of fuel and air to create a combustible mixture.

**Caster** – The angle that the swivel axis of a steered wheel makes with the vertical in the fore/aft direction.

**Catalytic Converter** – An emissions control device in the exhaust system that reduces emissions by catalysis.

**Catch Tank** – A container with the purpose of collecting liquid, generally lubricant, vented from an engine, transmission, transaxle, or differential and preventing the loss, from the car, of the liquid.

**cc** – Cubic centimeter (a unit of volume).

**Center-Lock** – A type of road wheel/hub that is retained by a single central fastener.

**Centerline** – A line coincident with the axis of rotational symmetry of a component.

**Centrifugal Clutch** – A clutch that automatically engages in response to an increase from low engine speed, and disengages upon return to low speed operation.

**Chain Drive** – A drive system in which the engine power is transmitted through a chain and sprockets.

**Check Valve** – A valve designed to prevent the flow of a fluid in one direction, while allowing relatively unimpeded flow in the opposite direction.

**Choke** – A carbureted induction system mechanism which, when actuated, causes an enrichment of the fuel/air mixture to assist cold starting.

**Clinch Nut** – A threaded female fastener that has been distorted on one end to supply a gripping force when assembled to a stud or bolt thread.

**Clutch** – A device whose function is to permit the driver to engage/disengage a power coupling between the engine and the transmission or transaxle.

**CO** – Carbon monoxide.

**Cockpit** – The driver/passenger volume within a car in which driver control devices, gauges, and seating are provided.

**Cockpit Adjustable** – Any system or component that can be adjusted by the driver while he/she is completely secured in the vehicle with all required safety devices in place and/or while the vehicle is in motion.

**Coil** – The transformer component of an ignition system that converts each low voltage pulse into a pulse of sufficiently high voltage to bridge the gap in a spark plug and initiate combustion in the engine.

**Coil-Over Shock** – A tubular shock absorber that contains top and bottom mounting locations for a coaxial coil spring, and is used with such a spring supporting the weight of the car.

**Cold Air Box** – An engine carburetor attachment of unspecified size and composition, whose purpose is to provide a source of ambient air alternate to that existing in the engine compartment.

**Component** – A constituent part of an assembly.

**Compression Ratio** – Reciprocating engines: the ratio of the sum of swept plus unswept volumes to the unswept volume.

**Compression Ring** – A reciprocating engine component that is intended to seal the gap between the piston and cylinder wall against the pressure differential arising from compression, induction or combustion.

**Compressor (AC)** – The engine-driven pressurizing pump in an automotive air conditioning system.

**Concentric** – Two components or objects are concentric if they share a common centerline.

**Condenser (AC)** – The portion of an automotive air conditioning system in which the refrigerant in vapor phase is converted to liquid phase.

**Connecting Rod** – A component physically connecting a piston to a crankshaft in such a way as to convert the rotary motion of the crankshaft to a reciprocating motion of the piston.

**Constant-Velocity Joint** – A type of universal joint in which the angular velocities of input and output shafts are held approximately equal.

**Cool Suit/Shirt** – Driver comfort clothing that may be cooled by a circulating liquid or frozen inserts.

**Cooling System** – Those components directly associated with the cooling of an engine, including any hoses, fans, radiators, etc.

**Cowl Induction** – An arrangement in which the incoming air for an induction system is ducted from the cowl area below the windshield.

**Crank-Triggered Ignition** – An ignition system in which the triggering pulses are obtained from a pickup and wheel connected directly to the crankshaft, or to an intermediate pulley.

**Crankshaft** – The rotating engine component which, driven by piston/connecting rod assemblies, transmits, for external coupling, the torque resulting from the combustion process.

**Crown** – The top face of a piston at which combustion takes place.

**Curvature** – The dimension defined by the maximum distance between a curving surface and the straight line between its ends.

**Cylinder Liner (Sleeve)** – An insert in an engine block that defines the path followed by a piston in its reciprocating motion.

**Dash board** – See instrument panel.

**Decamber (Verb)** – To make the wheel camber more negative.

**Deck** – Generally the rearmost upper body panel of a car, but not present in all cars.

**Deck Height** – The distance between the top of the piston at its outer edge and the machined surface that forms the head/block interface of the block.

**Deck Lid** – The access door into the volume (often “trunk”) beneath a deck.

**Differential** – A gear assembly, physically separate from the transmission, whose purpose is to reduce the rotational velocity transmitted from the engine/gearbox, while providing a division of driving force to two wheels.

**Differential Housing** – The housing in which the differential (final drive) gears are mounted.

**Disc Brake** – A braking system that relies on the friction between a suitable material in the form of a “pad” and a rotating disc to supply the braking force at a wheel.

**Discriminator Valve** – A check valve designed to install on the vent line of a fuel cell, allowing vapors to vent while retaining liquid.

**Dish** – A concave piston crown.

**Displacement (Engine)** – Reciprocating engine: the swept volume of one cylinder times the number of cylinders.

**Distributor Cap** – An ignition system distributor component that contains the high voltage distribution contacts and means for securing the high voltage wires.

**Dome** – A convex piston crown.

**Door Panel** – The trim panel that covers the inner shell of a door.

**Dowel** – A tubular or cylindrical pin, the sole purpose of which is to make positive location of two assembled components possible.

**Drive Belt** – A continuous flexible reinforced elastomer band that provides the driving force for engine accessories, when attached by pulley to a rotating part of the engine, such as the crankshaft.

**Drive Shaft** – The mechanical drive train coupling between transmission and differential, which may allow an angular displacement of the driving and driven axes by the use of universal, constant velocity, or flex joints.

**Drive Train** – Those components in a car that produce and convey the driving power to the ground, and the housings containing these parts.

**Dry Break Coupling** – An attachment to an on-board fuel cell/tank filler neck/hose that is designed to prevent the spillage of fuel during refueling operations.

**Dry Sump** – An engine lubrication system in which the residual lubricant is pumped to an external storage tank by a “scavenge pump,” and an additional pump or pumps return a supply of pressurized lubricant to the engine from the storage tank.

**Dry Tire** – A race tire, often with groove-less tread, intended strictly for use in competition under dry conditions.

**Dryer (AC)** – A component of an automotive air conditioning system that is intended to remove water from the refrigerant.

**Duct/Ducting** – A tube or passage for conveying a material, usually air.

**Dust Shield** – A cover intended to protect disc brake components from mud, dirt, etc.

**Exhaust Gas Recirculation (EGR) Valve** – An engine pollution control device that channels a portion of the exhaust gases back into the combustion regions of the engine.

**End Plate** – An air control panel mounted at each end and perpendicular to a wing, intended to maximize the efficiency of the wing by preventing spillage of flowing air at the ends.

**Engine** – The primary power plant of a car, including all physically attached ancillary components necessary for power production.

**Engine Air Box** – An induction system attachment, generally part of the bodywork, which ducts air from an opening protruding into the air stream to the induction system intake(s).

**Engine Case** – See block.

**Engine Compartment** – The loosely defined volume, nominally enclosed by panels on top and sides, which is the normal location of the engine in a car.

**Engine Mount** – A passive mechanical coupling used to support the weight of an engine at its attachment points to the structure of a car.

**Engine Steady Bar (Torque suppressor)** – A constraining beam or rod intended to resist the tendency of an engine to rotate on its mounts in reaction to torque forces.

**Evaporator (AC)** – That portion of an automotive air conditioning system in which the transition from liquid phase to vapor phase occurs.

**Exhaust Pipe** – A duct of unspecified dimensions, the function of which is to convey exhaust products toward the rear of a car and away from the driver.

**Exhaust Port** – The duct within a cylinder head or rotor housing through which the exhaust gases pass from the exhaust valve(s) to the outer flange of the head.

**Exhaust System** – A passive system with components that serve to convey the exhaust of an engine past the driver and away from the car.

**Expansion Tank** – A container, often operating at system pressures, which is designed to contain engine coolant on expansion at operating temperatures.

**Extension** – An external modification resulting in more material on the outside of the component than originally existed.

**Fairing** – A covering intended to divert airflow in a specific region of a car, to reduce air drag.

**Fan** – A rotating bladed device intended to provide a cooling flow of air to a heat exchanger.

**Fan Belt** – A flexible drive belt that is used to drive a water radiator cooling fan, and, often simultaneously, furnish drive to one or more other rotating attachments to the engine.

**Fasteners** – Any mechanism that serves no other purposes than to cause a component to maintain a fixed position (i.e. bolt, nut, screw, etc.).

**Fender** – The body panel covering a road wheel assembly.

**Fender Flare** – An attachment to an existing fender that extends the fender outward so as to more completely cover the tire within.

**Fender Skirt** – A removable fender extension that partially closes the wheel opening, smoothing the air flow in this region.

**Filler Cap** – A closure that prevents the loss of fuel from the filler neck/hose when the car is in use, but that may be removed for refueling.

**Filler Neck/Hose** – The attachment to a fuel cell/tank through which fuel is supplied from a source external to the car.

**Final Drive Housing** – See Rear Axle Housing.

**Final Drive Ratio** – The ratio of input to output shaft motions in a final drive or differential.

**Fire Extinguisher** – An on-board container of specified capacity charged with approved fire extinguishing material that provides the driver or others with the capability to control small fires.

**Fire System** – An on-board fire extinguishing system designed to be activated in the event of fire, whose purpose is to extinguish or retard the fire, thus providing a measure of protection for driver and car.

**Firewall** – A vertical (plus or minus 10 degrees) metal panel separating and protecting the driver/passenger compartment from the engine compartment, preventing the passage of flame and debris. Metal ducts may penetrate the firewall, but must begin and end outside of the driver/passenger compartment. No intakes are allowed in the firewall.

**Firing Order** – The order in which the cylinders in a reciprocating engine produce power under normal conditions.

**Flare (Verb)** – 1. To extend by extrusion or attachment a fender so as to more completely cover the tire mounted within (Noun) – 2. Extruded end of a pipe or tube.

**Flat Bottom** – A race car construction in which the underside of the car is nominally flat and contains no “ground effects” shaping or ducting.

**Flex Joint** – A coupling designed to fulfill the function of a universal joint, but employing flexible materials to achieve changes in the drive axis.

**Float** – A carburetor component which, with an associated valve, controls the fuel level in the reservoir supplying the carburetor jet(s).



**Float Chamber** – The carburetor component that contains the reservoir of fuel supplying the jet(s).

**Float Valve** – The shut off valve actuated by a carburetor float, which controls the maximum level of the fuel in the float chamber.

**Floor Pan** – The section(s) of a car normally used as a supporting platform for seats and to physically separate the interior (cockpit) area from the underside of the car.

**Fluid** – Any material that readily flows at the specified temperature (for example, liquids and gases at room temperature).

**Flywheel** – An engine attachment whose normal functions are to provide a gear appropriate for starter engagement, to provide a friction drive surface and attachment points for a clutch pressure plate, and to smooth the flow of power.

**Fuel** – The chemical mixture which, when mixed with air, is burned in an engine to produce power.

**Fuel Cell** – A crash-resistant container for the on-board fuel supply of a car.

**Fuel Distribution Unit** – A fuel injection induction system component that accomplishes the distribution of fuel to the injection nozzles.

**Fuel Filler Restrictor** – A plate with a small flap designed to restrict refueling to a specifically sized nozzle.

**Fuel Injection** – A system, including mechanical and/or electrical components, whose function is to provide fuel, via pressurized nozzles, to the engine in lieu of carburetion.

**Fuel Line** – A hose or tube that conveys fuel from one point to another.

**Fuel Metering Unit (Fuel Pressure Regulator)** – A component of a fuel injection system which, under external control, determines the quantity of fuel supplied to the engine at any given time.

**Fuel Pickup** – The attachment to a fuel tank or fuel cell at which point the supply line(s) leading to the fuel pump(s) are attached.

**Fuel Pump** – A pump, mechanical or electromechanical, whose function is to cause the transport of fuel from the fuel cell or tank to the induction system.

**Fuel Tank** – A conventional OEM container, not of the safety fuel cell type, for the on-board fuel supply of a car.

**Gas Cap** – See Filler Cap.

**Gasket** – A sealing component of unspecified composition that is intended to prevent the leakage of a fluid (air, water, oil, etc.) at the interface between two demountable assemblies.

**Gauges** – Mechanical or electronic readouts of automotive parameters.

**Gear** – A toothed drive train component used, in mesh with another gear, for the transmission of rotational force.

**Generator** – An engine-driven attachment that produces direct current to replenish an on-board storage battery.

**Grille** – The decorative covering for the grille opening.

**Grille Opening** – The opening in the front of a car, through which cooling air is ducted to the radiator(s), and in some cases, to other accessories, or to the engine.

**Ground Effects** – A term for a car design in which airflow produces a significant pressure differential between the upper and lower portions of the body/chassis, creating downforce on the assembly.

**Gudgeon Pin** – English term for piston wrist pin.

**Gusset** – A brace generally formed by welding, a plate at or near the junction of two structural beams or tubes, providing reinforcement particularly in the plane including the tubes and the plate.

**H.D.** – Heavy duty.

**H.T.** – High tension. English term for spark plug voltage in regard to ignition components.

**Hand Brake** – A braking system component causing a braking action on one or more wheels, or on another part of the drive train, which may be actuated and locked in the engaged position by the driver.

**Hardtop** – A removable rigid substitute for a convertible or roadster top.

**Hatchback** – A hinged body component containing the rear window that, in the open position, gives access to the interior of a car from the rear.

**Head and Neck Restraint** – A protection device that attaches to the helmet and is intended to decrease neck stresses and forward head movement during an impact.

**Head Rest** – See Head Restraint.

**Head Restraint** – A cushioned, fixed restraining object intended to protect the driver under conditions that cause the driver's head to be thrust rearward.

**Header** – A multibranch exhaust system assembly, the function of which is to convey the exhaust products from more than one cylinder to one or more exhaust pipes.

**Header Tank** – A component of an engine cooling system, generally at the top or above the radiator, which is often used as the filling point for the system.

**Headlight Cover** – A protective cover for headlight(s) that is part of the original configuration of the body design.

**Heat Riser Tube** – An attachment to an induction system that provides a source of warmed air, generally from the exhaust system, as an aid to cold running.

**Heat Sink** – A part of a system used to convey and dissipate heat from another part of the system.

**Helicoil** – A commercial repair for internal threads.

**Homologation** – A system whereby the manufacturer/competitor certifies that a Formula or Sports racing car, as produced, complies with the applicable specifications.

**Hood** – The panel or assembly of panels that cover the engine compartment.

**Horn** – The audible signaling device with which highway cars are equipped.

**Hot Terminal** – The terminal of a storage battery that is not connected to the frame or chassis of the car.

**Hub** – A component to which a road wheel is attached, which provides support for the wheel, and has the capability, via attached internal bearings to rotate on a fixed shaft.

**Hub Caps** – Decorative removable attachments to the central area of road wheels.

**Hub Carrier** – A suspension component that provides the means for mounting a rotating wheel hub, and for attachment of suspension components and stabilizers.

**Idler Shaft** – A shaft that rotates or supports another component that rotates without itself transmitting the rotational force.

**Ignition System** – A system that converts on-board storage battery supply voltage into a timed sequence of high voltage pulses suitable for igniting engine combustion mixtures in a controlled manner.

**Independent Suspension** – A suspension system in which either wheel on the referenced end of the car can undergo its normal vertical motions without directly influencing the motions of the other wheel.

**Induction System** – Those engine components directly associated with the creation and conveyance of the combustible mixture, and any functional associated attachments thereto.

**Injection Nozzle** – The fuel induction system component through which fuel is forced under pressure to form a combustible mixture with air.

**Inlet Port** – The cylinder head duct leading to intake valve(s).

**Insert (Strut)** – The replaceable portion of a suspension strut, basically a tubular shock absorber with the necessary fastening element(s) for the upper strut mounting point.

**Instrument** – An indicator or readout which, when active, contains information about some aspect of car operation for driver reference.

**Instrument Panel** – A panel, the associated mounting bracket(s), and HVAC ducting components, located within the cockpit of a car, and in a position convenient for driver visibility, which may provide a mounting area for various gauges and controls. Also referred to as a dash pad or dash panel.

**Intake** – An opening through which fluid/air enters an enclosure.

**Intercooler** – A heat exchanger associated with a turbocharging or super-charging system, which is intended to reduce the temperature of the incoming air or air/fuel mixture, and is located in ducting between the turbo/super-charger and the engine.

**IR** – Individual runners. (No balance pipe, no plenum)

**Jack Points** – Locations on the underside of a car suitable for the application of a lifting jack.

**Jack Shaft** – A shaft that transfers a driving force from one element of an engine to another, such as the drive for an oil pump and/or distributor, taken from an overhead camshaft.

**Jet** – A carburetor aperture component which is used to meter air and/or fuel flowing into the mixing region of the carburetor by presenting restriction to the flow.

**Kill Switch** – See Master Switch.

**L.T.** – Low tension. English term for battery voltage in regard to ignition components.

**Limited Slip Differential** – A differential which is designed in such a way as to overcome the normal action of a differential to apply most of the available torque to the least loaded wheel, and instead to apply a significant portion of the torque to the most loaded wheel.

**Linkage** – A link or system of links (cables, rods, etc.) that convey a mechanical force from one location to another.

**Lip-Type Rear Spoiler** – A directly attached aerodynamic device that generates downforce from the action of air flowing over a single surface, creating a turbulent depression away from the direction of motion.

**Lobe Center** – The angular position of a camshaft, defined as that position in the rotation at which the lift of an associated tappet will be greatest.

**Locked Differential** – A variation of the limited slip differential in which no relative slippage of the two driven wheels is permitted under any conditions.

**Lubricant** – A substance which, when interposed between components moving with respect to each other, reduces friction and promotes durability. (See 9.3.36)

**Luggage Compartment** – The region within the bodywork of a car that is designated as being intended for the carrying of luggage.

**“M” Model Components** – Those components specific to M model cars (i.e. M1, M3, M5, M6).

**Magneto** – An ignition system component that generates the electrical power for ignition of combustion with a system of magnets and coils in relative motion.

**Main Bearing Cap** – A reciprocating engine component which has provision for nominally half of one main crankshaft bearing, and which, when attached to the engine block, may also provide lateral location for the crankshaft.

**Manifold** – A passive device for conveying gases into or out of an engine, generally to achieve the connection of differing numbers of ducts.

**Master Cylinder** – A hydraulic component of the braking system that produces positive pressure in the hydraulic lines on the application of mechanical force.

**Master Switch** – A safety switch that can be actuated by the driver or other to disable all operating electrical functions, without disconnecting the electrical supply to any fire system present. Also called a kill switch.

**McPherson Strut** – (See strut type suspension) A front suspension type utilizing a strut with integral tubular shock absorber and coil spring, with the steering swivel axis that of the strut/shock. Upper location is by strut only.

**Metallic** – A material having iridescent or specular (mirror-like) reflective qualities (for example, aluminum foil).

**Maximum Body Width** – The widest point of the beam of the race car at the front or rear structural quarter panels or doors, including allowed flares. Mirrors or other similar items are not considered part of the body for width determination

**Metering Rod** – A carburetor component that aids in the metering of fuel flow.

**Mirror (Rear View)** – A reflective device whose sole purpose is to enable the driver's field of vision to extend in a rearward direction.

**Modify** – To change a component by reworking, but not by replacing.

**Monocoque** – A frameless construction in which the main structure of a car is composed of a permanent assembly of panels to which the running gear, suspension and body are attached.

**Motor Mount** – See Engine Mount.

**Mudguard** – A partial fender, generally not contiguous with the car body.

**Muffler** – A component, the function of which is to reduce the sound level from an exhaust system.

**NASCAR-Style Door Bars (Ladder Bars)** – If installed, shall consist of one or more sidebars that intrude into the door cavity and connect the roll cage main hoop to the front hoop

**Needles (Carburetor)** – Tapered carburetor fuel flow metering shafts, or tapered shafts used in float shutoff valves.

**Nitride (Verb)** – To heat process ferrous metal components so as to increase the surface hardness.

**O-Ring** – A seal or gasket generally made from an elastomer or metal, in the shape of a torus with a circular cross section.

**O E (OE)** – Original Equipment. Original or factory-installed standard or optional equipment and components available on standard production vehicles delivered to BMW or MINI authorized dealers for sale to the general public for use on public roads.

**O E M (OEM)** – Original Equipment Manufacturer. OEM status (in the United States) signifies that BMW's automotive products have been tested and validated according to Federal Motor Vehicle Safety Standard (FMVSS) and Department of Transportation (DOT) regulations. OEM may also describe parts manufactured by companies that supply BMW with components used to build vehicles, but not necessarily that same part that BMW actually uses to build vehicles.

**Offset Key** – A metal drive key for coupling a shaft and a pulley, wheel, or sprocket, in which opposite radial ends of the key are offset to achieve adjustment of the phase relationship of the driving and driven parts.

**OHC (Overhead Cam)** – A type of reciprocating engine in which the camshaft(s) are located in the cylinder head(s), and act on the valves, either directly or through a linkage.

**Oil Filter** – An engine accessory intended to intercept all or a portion of the lubricant circulating from the oil pump, and to remove, by trapping, solid particles from the lubricant.

**Oil Galley** – A passage within an engine block that carries the flowing lubricant to various internal distribution points.

**Oil Line** – A hose or pipe, external to the engine, which conveys lubricating oil from one point to another.

**Oil Pan** – An oil sump fixed to the bottom of an engine.

**Oil Passage** – A duct within an engine component intended to convey lubricating oil.

**Oil Pump** – A mechanically driven pump designed to draw lubricant from a reservoir, or sump, and supply it under pressure to the balance of the lubrication system.

**Oil Strainer** – A screen surrounding the oil pickup in an engine that is intended to keep relatively large solid particles from being drawn into the pump.

**Oil Sump** – The container in which the return lubricant from the engine is collected to form the supply from which the pump may draw.

**Outline** – A line that marks the outer limits of an object or figure.

**Overhang** – The distance that the end of the bodywork extends away from the wheels at the referenced end of the car.

**Parkerizing** – A commercial process in which a metal part, usually a camshaft, is treated to increase resistance to break-in scuffing.

**Parking Brake** – See Hand Brake.

**Parking Light** – A non-racing lighting component, frequently combined with lighting components of other functions, intended to illuminate the extremities of a car while parked.

**Phase** – The angular relationship between two rotating components, or between one rotating component and a periodic event.

**Pickup point (Suspension)** – The location of attachment of a suspension component on the sub-frame, or structure (unibody) of the car. Pickup point is also referred to as “pivot axis.”

**Pilot Bearing** – A bearing, generally within one end of a shaft, which is intended to support another shaft under conditions of relative rotary motion.

**Piston** – A reciprocating engine component whose functions are to provide a partial vacuum with which to induce the flow of fuel/air into the combustion region, to convert the combustion pressures to reciprocating motion, and to expel exhaust gases.

**Piston Ring** – A reciprocating engine component which, when mounted on a piston, provides either sealing or oil control functions when the engine is in operation.

**Pitman Arm** – A steering system component that translates the rotation of the steering gears to a linear motion of steering links.

**Plenum** – An induction system chamber generally interposed between carburetor(s) or air intake(s) and ducts feeding ports.

**Points (Ignition)** – The switch portion of a distributor actuated by cam lobes, which interrupts the current flowing through the primary windings of an ignition coil, thus generating high voltage pulses that are conveyed to the spark plug.

**Polish (Verb)** – To reduce the roughness of a surface by mechanical, chemical, or electrochemical means.

**Port** – See Intake, Exhaust Ports.

**Power Brakes** – A braking system in which the driver-initiated mechanical force acting on a master cylinder is assisted by a servo mechanism, generally derived from manifold vacuum.

**Power Steering** – A steering system in which the driver-initiated force acting on the steering gears is assisted by a servo mechanism, usually involving an engine-driven hydraulic pump.

**Pressure Equalizing Device** – A braking system component intended to equalize or allow adjustment of the relative pressures in separate branches of the hydraulic system (for example, front/rear).

**Pressure Plate** – The clutch assembly component that provides the force necessary to couple the engine to the next component in the drive train through friction surfaces.

**Pressure Regulator Spring** – A spring whose installed force determines the pressure at which a valve or valve system will open to allow the flow of fluid.

**Profile (Verb)** – To measure or to reshape the contour of a camshaft lobe, rocker arm or similar component.

**Propeller Shaft** – See Drive Shaft.

**Proportioning Valve** – A braking system component intended to allow adjustment of the hydraulic pressures available in separate branches of the system (for example, front/rear).

**Pulley** – A rotational attachment for a drive belt.

**Qualifier** – (a) One who receives a time, or (b) One who is waived into a race by the Competition Steward and starts the race.

**Racers Tape** – Generally duct tape, an adhesive, fabric-backed tape.

**Rack and Pinion** – A type of steering system, or the gear components thereof, in which the rotary motions of a pinion gear attached to the steering shaft act on a rack, or linear gear.

**Radiator (Cooler)** – A heat exchanger intended to remove heat from engine or gear fluids.

**Radius (Verb)** – To contour an abrupt edge on a component by increasing the radius of the transition.

**Rain Tire** – A racing tire intended solely for competition in wet conditions.

**Ram Air** – A type of induction system in which the incoming air is obtained from an extension into the air stream outside the bodywork.

**Ratio (Gear)** – The number of rotations of the drive shaft that produces one rotation of the driven shaft(s).

**Rebound** – A suspension term referring to motion in the upward direction.

**Reciprocating Engine** – An internal combustion engine in which the driven actions of one or more pistons are converted to the rotary motion of a crankshaft.

**Relief Valve** – A check valve intended to vent at a predetermined pressure differential.

**Remote Reservoir Shock Absorber** – Any shock absorber or damping device that uses an externally mounted (connected either by hose or “piggy back” design) fluid and/or gas reservoir.

**Repair (Verb)** – To remove the effect(s) of accidental damage to a component, returning it to original or legally modified dimensions and function.

**Replica** – A component identical to or very similar in appearance and function to the original that it replaces.

**Resistor Spark Plug** – An ignition system spark plug containing electrical resistance that is intended to reduce radio interference.

**Ride Height** – The distance from level ground to the specified portion of the car, with the tires, wheels, air pressure, etc., as normally raced.

**Rim Width** – The distance between the opposing lateral sides of a road wheel in the region where the bead of a tire seats. Measuring method per tire and rim association standard.

**Ring Gear** – The main driven gear in a final drive assembly, driven by a pinion gear. Also the starter engagement gear on a flywheel.

**Rocker Arm** – A valve train component that transfers the motions of the camshaft, often with a multiplication of travel, to a valve.

**Rocker Cover** – See Valve Cover.

**Rocker Panel** – The body panel closest to the ground extending along either outer side of a car between the wheels.

**Rod End** – A load-bearing threaded mechanical coupling with angular freedom of the relative axes and that allows rotation of the inner portion with respect to the outer, (for example, heim joint).

**Roll Bar** – A safety device designed to protect the driver from injury in the event of a roll over accident.



**Roll Cage** – An extension of a minimal roll bar, designed to protect the driver from injury from accidental forces in several directions.

**Roller Cam Follower** – An engine component (tappet) that utilizes a rolling member to contact the camshaft.

**Runner** – A duct of an induction system leading to the cylinder head.

**Running Light** – A signaling light of specified size and location, which can be activated by driver control, and is intended to improve the ability of other drivers to detect the signaling car.

**Scattershield** – A stationary safety device intended to protect the driver in the event of catastrophic clutch/flywheel failure.

**Scrapper** – A passive internal attachment to an oil pan whose purpose is to control the return flow of lubricant by removing it from the rotating crankshaft.

**Seal** – A conformable sealing component generally used to inhibit the passage of fluids along the shafts of moving parts, such as valves, master cylinders, etc.

**Seat Belt** – A safety strap, generally containing the attachment/release mechanism for all other safety straps, intended to restrain the driver against forces tending to move the driver.

**Section Width** – The lateral cross section of a tire, sidewall to sidewall.

**Servo Assist** – The application of mechanical assistance, through vacuum or hydraulic or other external action, to reduce the forces required from the driver.

**Shaved Tread** – A tire tread that has been abraded or cut to reduce the tread depth.

**Shift Fork** – A transmission or transaxle component that directly moves gears into engagement or disengagement in response to driver actions.

**Shock Absorber** – A device intended to damp the actions of road springs.

**Shot Blasting** – See Shot Peening.

**Shot/Glass Peening** – A treatment, consisting of impelling small glass or metal balls into metal parts, intended to reduce stresses in components.

**Shoulder Harness** – A safety strap assembly intended to restrain the driver's upper body under conditions of rapid reduction of forward velocity.

**Side Marker Light** – A small light fixture normally mounted on the side of a fender, which is intended to make the car more readily visible from the side under appropriate conditions.

**Signal Light** – A light fixture used to signal turns or, in some cases, stops.

**Slave Cylinder** – A hydraulic system component that achieves the conversion of hydraulic pressure to mechanical force, usually to accomplish a disengagement of the clutch.

**Spark Plug** – An engine component which, by means of high voltage supplied by an ignition system, initiates the combustion of the air/fuel mixture.

**Specification** – A detailed presentation of parameters that determine the performance or suitability of a system or assembly of systems to accomplish design goals.

**Spherical Bearing** – A load-bearing connector in which the central portion is convex and the outer portion is concave, allowing both angular displacements of the axes and relative rotation.

**Spider Gears** – Components of the torque division section of a conventional differential gear assembly.

**Spindle (Stub Axle)** – The shaft, and integral assembly supporting a wheel hub, and often, braking and/or steering components.

**Splitter** – An aerodynamic piece that is parallel to the ground and attaches to the bottom of the front bumper cover or air dam.

**Spoiler** – A panel attached to the body of a car at the front, intended to alter the airflow around or under that end of the car when in motion.

**Spring Cap** – See Valve Spring Retainer.

**Spring Shock** – A suspension assembly containing a coil spring surrounding a tubular shock absorber.

**Spring Washer** – A spacer designed to exert force against securing pressure, thus reducing the tendency of an attached threaded fastener to separate.

**Sprocket** – A gear made specifically for use with a drive chain.

**Stabilizer** – An attachment to the suspension system, not usually part of the suspension, which aids in maintaining the relative alignment of a wheel or wheels to the car.

**Starter (Self Starter)** – An electrical device that is used to initiate normal engine operation by converting electrical energy into mechanical rotation of the engine.

**Starter Ring** – The gear on the outer periphery of a flywheel for application of drive from a starter.

**Stayrod (cross or X brace)** – A rigid reinforcement bar or rod interconnecting opposite sides of a car at structurally significant locations.

**Steering Arm** – The rigid link in a steering system that conveys the steering action from the steering gears and linkage to a wheel assembly.

**Steering Column** – The shaft forming the connection between the steering wheel and the steering gear, through which driver-initiated steering motions are transmitted.

**Steering Linkage** – The various components, exclusive of gears, steering column and steering wheel, which transmit the driver's steering motions to the steered wheels.

**Steering Lock** – The degree of turning motion given to the steering wheel, and hence to the steered wheels. "Full lock" denotes the maximum available turning angle.

**Steering Lock Mechanism** – An antitheft device used to lock the steering shaft or wheel when the ignition key is withdrawn.

**Stock** – Referring to a component on the car that is as delivered on the vehicle through the regular U.S. dealer network.

**Stock Replacement** – Referring to a component on the car that is as delivered on the vehicle through the regular U.S. dealer network but is replaceable by either the OE- or OEM-equivalent component.

**Streamlining** – Smoothing the airflow over a portion of the car.

**Stroke** – The length of travel of an engine piston from uppermost to lowermost positions.

**Strut (Stabilizer)** – A rigid beam used to assist in the location of suspension components.

**Strut Type Suspension** – Strut suspension consists of three pivoting attachment points including a single upper attachment point, the spindle being mounted on a telescoping post with no vertical movement at the top attachment point.

**Stub Axle** – See Spindle.

**Surround** – To enclose on all sides.

**Sunroof** – A movable panel in the roof of a car, which may normally be partially opened from within the car.

**Supercharger** – An induction system compressor component, mechanically driven from the engine, which provides forced flow of the fuel/air mixture into the engine by the generation of positive pressure.

**Suspension Bushing** – A hollow cylindrical mounting component that acts as a bearing, allowing constrained motion, between a suspension component and attachment point.

**Suspension Control Arm** – A beam or frame intended to limit the normal motion of the affected suspension part to predetermined paths.

**Swaged Fitting** – Tubing fitting that utilizes some form of extrusion of the tubing to form a seal against the leakage of pressurized fluid from within the tubing.

**Sway Bar** – See Anti Roll Bar.

**Synchronizer** – A transmission component that aids in matching speeds of two gears as they are engaged.

**System** – An assembly of components with an identifiable primary function.

**Taillight** – The running (parking) light assemblies at the rear of a car, which may include lights with stop and/or turn signaling functions.

**Tap (Verb)** – To cut threads in a hole to retain a stud or bolt with threads of matching pitch and diameter.

**Tappet** – (Cam follower, valve lifter) An engine component which, in contact with the camshaft, follows its rotating profile, resulting in a programmed reciprocating motion suitable for actuating valves.

**T D C** – Top dead center, referring to the rotational position of the crankshaft when the number one piston is farthest from the crankshaft.

**Thermostat** – An engine cooling system regulator device that is intended to control the temperature of the coolant by modulating the flow through an aperture.

**Throttle Butterfly** – An induction system component that may effectively vary the area of the induction port when turned (in response to driver input) from parallel to the flow in the port (“full throttle”), to almost perpendicular to the flow (“closed throttle”).

**Throwout Bearing** – A bearing which, in response to driver actuation, accomplishes the application of the force needed to release the friction clutch through the actuation of the pressure plate.

**Tie Rod** – The link connecting a portion of the steering system that is fixed to the chassis to a sprung wheel.

**Time (Verb)** – To adjust the phase relationship of ignition and crankshaft, or of camshaft(s) and crankshaft.

**Timing Belt** – A toothed belt used, with appropriate pulleys, to convey drive force in a synchronous manner from the crankshaft to one or more camshafts.

**Timing Gear** – The engine gear or sprocket attached to a camshaft and driven by the crankshaft via gear(s) or chain.

**Tire Tread** – The portion of a tire containing the material intended to be in road contact while a car is in straight-ahead motion.

**Toe (-In, -Out)** – The measure of the position of the wheels on either axle of a car with respect to each other, with reference to the fore/aft direction.

**Top (Removable)** – A removable covering for an open car, normally supplied for protection against the elements.

**Torque Biasing Differential** – A form of limited slip differential.

**Torque Converter** – An engine-driven power transmission device that couples driving and driven shafts with a variable speed reduction.

**Torque Suppressor** – See Engine Steady Bar.

**Track** – The distance between the center of the rims of two wheels at one end of a car, with any angular adjustments at normal settings and steered wheels in the straight ahead position.

**Trailing Arm** – A wheel control linkage locating the wheel in the fore/aft direction, which is attached to the car structure at the forward end of the arm, and to the wheel carrier at the rear of the arm.

**Transistor Ignition** – A system of ignition in which electronic components are utilized.

**Translucent** – Permitting the passage of a reasonable amount of visible light. In the case of fluid containers, permitting the visual assessment of fluid levels by observing these through the container.

**Transmission (Gearbox)** – An assembly of driver-selectable gears in an independent housing, located between the engine and driven wheels, whose function is to alter the rotational velocity reaching the wheels.

**Transparent** – Offering very little resistance to the passage of visible light, suitable for use in the line of sight.

**Trim** – Coverings or attachments whose function is solely cosmetic.

**Trued Tread** – The tread of a tire that has been cut after mounting on a wheel so as to ensure that the surface of the tread is equidistant from the center of the wheel at all angles of rotation.

**Trunk Area** – The spare tire and/or luggage region inside the body of a car.

**Tub** – The central contiguous assembly of stressed panels that form the basic structure of a frameless car.

**Tub-based (non tube-frame) Car** – A non-tube frame car has a stock floor pan, firewall, door pillars, sills, windshields conforming to stock profile, and window frames, etc.

**Tube Frame Car** – A car intended solely for racing, whose main structure or frame is fabricated from an assembly of tubes welded into the desired configuration.

**Tuftriding** – A commercial surface hardening process for ferrous metals.

**Turbo Boost Control** – An adjustment that causes a change in the degree of turbo boost available.

**Turbocharger** – An induction system compressor component, driven by exhaust gases from the engine, which provides forced flow of the fuel/air mixture into the engine by means of positive pressure.

**Undertray (Belly Pan)** – An attachment to the underside of a car intended to smooth airflow and/or to offer driver protection in this region of the car.

**Unibody** – A type of construction in which the main car structure is fabricated from an assembly of panels and reinforcements, permanently fastened together, generally by welding, into a single unit.

**Universal Joint** – A mechanical drive train component that permits a change in direction of the axis of rotation conveying the force.

**Unswapt Volume** – The enclosed volume existing in a cylinder/cylinder head with the piston at its closest approach to the cylinder head.

**Vacuum Advance Mechanism** – An ignition distributor mechanism which, under the influence of manifold vacuum, changes the ignition timing in a prescribed fashion.

**Valve** – A reciprocating engine component, consisting of head and a stem, which may be opened or sealed in phase with crankshaft rotation, so as to control the induction of fuel/air mixtures or the exhaust of products of the combustion process.

**Valve Cover** – A cylinder head attachment whose function is to contain lubricants and to protect the valve actuation mechanism from outside contaminants.

**Valve Guide** – A sleeve bearing whose function is to provide axial location of a valve, while allowing normal reciprocating motions.

**Valve Head** – the portion of the valve that is larger than the stem.

**Valve Keeper** – The component, generally two-piece, which secures the valve spring retainer to the valve stem in a cylinder head.

**Valve Relief** – A cutout in a piston crown to allow close approach of a valve.

**Valve Seat** – The area in a cylinder head in which the head of a valve under spring pressure forms a gas seal.

**Valve Size** – The diameter of the head of a valve.

**Valve Spring Retainer (Collar)** – A valve train component that serves the dual purpose of containing the outer end of the valve spring(s), and, by means of valve keepers, connecting the valve stem to the spring.

**Valve Spring Shim** – A valve train component whose purpose is to allow the adjustment of the seated valve spring pressure by effectively changing its seated length.

**Valve Stem (Engine)** – The shaft portion of a reciprocating engine poppet valve.

**Valve Stem (Wheel)** – The attachment to a road wheel through which pressurizing air is admitted/released.

**Vapor Lock** – A condition in the fuel delivery system caused by the existence of vapors, rather than liquid fuel, in the fuel pump, resulting in abnormal fuel delivery.

**Variable Ratio Drive** – A power transmission device in which at fixed input shaft rotational velocity the rotational velocity of the driven shaft is continuously variable over a prescribed range of ratios.

**Velocity Stack (Air Horn/Trumpet)** – An induction system attachment, generally in the form of a cylindrical flare, used to alter the dynamic coupling between carburetor and the mass of incoming air.

**Vent** – An aperture that allows pressure equalization between a semi-sealed volume and the outside of this volume by providing a flow path for gases.

**Ventilation** – Cooling a component by an intentional flow of air, or modifying a component so as to facilitate this process.

**Venturi** – A region of constriction in an air duct of a carburetor in which, through the actions of incoming air flow, a reduced pressure is created to induce the inflow of fuel through one or more jets.

**Vibration Damper** – Generally a rubber-mounted rotating circular disc or pulley whose function is to reduce the amplitude of vibrations in the mechanism or part to which it is attached.

**Visible** – Capable of being seen, perceptible to the eye, apparent, evident.

**Voltage Regulator** – An electronic or electromechanical device intended to regulate the charging actions of an alternator or generator.

**Wave Washer** – A thin, continuous spring washer.

**Welding** – The process of fusing one or more components into a single unit by means other than adhesives or fasteners (for example, TIG, MIG, soldering, brazing, etc.).

**Wheel** – Flange and Rim.

**Wheel (Steering)** – The cockpit-mounted control device, normally circular, which allows the driver to exert manual force with which to control the car's direction of motion.

**Wheel Cover** – A removable decorative covering for a road wheel.

**Wheel Cylinder** – A hydraulic component of the braking system, which produces mechanical force at the wheel brakes in response to positive hydraulic pressure.

**Wheel Fan** – An integral part of or attachment to a wheel assembly with blade-like elements, intended to improve brake cooling.

**Wheel Spacer** – A plate of unspecified thickness or material that is mounted between a road wheel and hub to increase the distance from the inside of the wheel to the hub, thereby increasing track.

**Wheel Trim Rings** – Decorative removable attachments to road wheels effectively covering the rim area of the wheels.

**Wheel Well** – The volume under a fender.

**Wheelbase** – The distance between the front and rear axle centerlines of a car, with the front wheels in the straight ahead position.

**Windage Tray** – An internal baffle attachment to an engine oil pan that is intended to help maintain a sufficient supply of lubricant at the location of the oil pickup under cornering, braking or acceleration.

#### **Windows:**

- A. Door or Side – The opening where the window normally is raised or lowered in a door. Does not include a “vent” window whether fixed or movable.
- B. Quarter (1/4) – On a 2-door or 4-door vehicle, the window to the rear of the rearmost door. Such windows are not generally raised or lowered, but they may be hinged and open to the rear. Quarter windows are not “rear” windows.
- C. Rear – Rear windows are positioned (roughly) at right angles to the longitudinal axis of the car.

**Windshield** (Windscreen) – A forward-facing attachment to the bodywork of a car intended to divert the flow of air from forward motion without obstructing forward vision.

**Windshield Pillar** – A body component that extends nominally upward from the cowl area, forming one supporting attachment for the windshield.

**Wing** – An aerodynamic attachment that is usually attached to the rear deck lid specifically intended to generate downforce from the action of air flowing over the upper and lower surfaces, creating a pressure differential.

**Wiring Harness** – Bundles of electrical wires that provide the electrical links in a car.

**Wishbone Type Suspension** – A form of suspension in which the lower (and often upper) locating links are in the form of a wishbone or “A-frame”, and provide the lateral and at least a portion of the fore/aft wheel location.

**Worm and Sector** – A steering gear type in which the steering forces from the driver are transmitted to the steering linkage via a worm gear and a sector gear in mesh.

**Wrist Pin** – The one-piece physical link between a connecting rod and a piston.



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