



"H.O. Slot Car Racing ... The World's Fastest Motorsport"



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OFFICIAL NATIONAL RULES

2026

Revised 12/29/26



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Important Dates:

- January 15th – Final rule book completed and posted.
- April 15th – Stock replacement parts - Part that is designed to replace an existing Stock part must be available to all racers by this date.
- June 1st – All items to be added to the agenda for the National Open Meeting.
- October 15th – Car, Chassis and Magnet submittal deadline date.
 - HOPRA approved/disapproved – no later than December 15th
 - (Manufactures typically notified within 3 weeks of submitting)
- December 15th – outstanding rule proposals and revisions shall be finalized.



25. APPENDIX GUIDELINES

- A. **Stock armature:** The armature as it comes from the original manufacturer. Must be readily available. It must be a production machine wound red wire with crimp/folded/welded tabs. No post manufacture dewinding, rewinding, or soldered tabs. The armature must contain: one shaft, 1/4 laminations, 2 plastic heat shields, and one commutator. The commutator must contain separate components, which include three (3) separate copper or metal segments covering one (1) solid plastic insulator held together by one (1) plastic ring or band. No high temperature one piece molded, ceramic, or bonded commutators are allowed. Armature must contain 1/4 metal non-coated laminations with one heat shield at the beginning and end of the laminations stack. It must not exceed .285" in total length when measured from the top lamination to bottom lamination. The minimum diameter shall not be less than .367" and may not exceed .375". Minimum weight shall be no less than 3.20 grams. Maximum gap/opening cannot exceed .064". Minimum ohms requirements are set per class and are measured pole to pole with armature removed from car and checked after a 5-minute cool down period.
- B. **Hot Stock armature:** A modified Stock armature that may be epoxied, have the commutator trued, outside of the laminations dyed and be advanced timed. Small cuts or drill marks may be made for balancing only. No machining, cutting, or drilling along the entire length (touching each lam) or circumference (touching the entire lam or lams) of the lam or stacks. Minimum weight shall be no less than 3.20 grams. Funds permitting, if the armature is found legal, HOPRA will reimburse the racer for armatures destroyed in post-race tech. Minimum ohms requirements are set per class and are measured pole to pole with armature removed from car and checked after a 5-minute cool down period.
- C. **Chassis:** H.O. scale slot car "frame" designed for current H.O. slot car track competition as it is produced by the manufacturer and adheres to all other rules. HOPRA Approved chassis are outlined in each class. Chassis and chassis components must be:
- Made from a plastic type or other material and cannot be metal, magnetic, or conductive.
 - Injection molded and no after production machining is allowed except where allowed per class rules.
 - All Magnets are considered part of the chassis.
 - a. and b. above do not apply to the chassis clips - Any chassis clip used to hold the car together that is metal, magnetic, or conductive must not touch the magnets or affect the magnetic field.
 - The endbell, magnet retaining clip(s), bulkheads, and timing brackets are not considered part of the chassis and must follow the same guidelines as above (a and b).
- D. **General rule #9:** All new cars, chassis and magnet sets must be submitted no later than October 15th to be considered for approval for the following year's National Championship Race. The submitted car, chassis or magnet(s) must be the final-produced product (marketing packaging may be excluded) that is sold. If for any reason a manufacturer does not submit a new car/chassis/s/magnet set, a member of the HOPRA Executive Committee may purchase the item for submission to the Committee for review and approval. An original purchase receipt that shows the name of the vendor, their address, phone number, name of item purchased, its price and the total price paid, must accompany all items submitted in this manner.



24. NATIONAL EXECUTIVE COMMITTEE ORGANIZATIONAL CHART

National Director+
Assistant Director+ Membership Director+ Information Director+
State/Regional Representatives++
Manufacturer Representatives (non-voting positions)+++

+Filled or voted in from within the current National Executive Committee members.

++Voted in by current state/regional HOPRA members.

+++Appointed by manufacturers (Scale Auto/BSRT ©, Slottech ©, Wizzard ©, RPMs ©, Viper Scale Racing ©)

DUTIES

National Director – Oversees the general operation of the organization within the procedural guidelines of the Official HOPRA National rules.

Assistant Director – Assists the National Director with day-to-day organizational operation and stands in for him/her when requested.

Membership Director – Receive membership applications, issues packets, maintains current membership list and makes it available to all state/regional representatives.

Information Director – Creates, oversees, and updates website, print materials, audio/video technology, network operations, lap counting software brackets, and any other items as requested by Directors and Representatives.

State/Regional Representatives – Voice for the current membership in their state/region, present and vote on new rule proposals.

Manufacturer Representatives – Gives State/Regional Representatives information on new products, concerns of manufacturers and informs manufacturers of rule proposals and any other information. Included in National Executive Meetings (for the parts submission portion of the agenda) to provide answers/feedback on products. (Non-voting position)

1. DEFINITIONS

1. Concours d'Elegance	A competition to determine the best-looking cars.
2. Best Appearing Race Car	A competition to determine the best-looking cars that are entries in a racing event.
3. Cut	Sanding, melting, trimming, i.e., to reduce. (This does not include natural wear caused by track rails.)
4. Entry	One who has paid the entry fee and whose car has passed the technical inspection.
5. Extra Magnets	Any <u>stock</u> magnets that are not armature magnets.
6. Flux Collectors	<u>Shim</u> (not including a car's armature and magnets) that strengthens a magnet for horsepower or handling purposes, and/or collects magnetic flux for handling purposes.
7. General Rules	Rules which are applicable to all car classes.
8. Readily Available	Mass produced for HO slot car racing and obtainable by October 15th prior to the year's National Championship Race.
9. Scratch built	Chassis or individual car parts made by hand and are not mass produced.
10. Shall	Mandatory.
11. Shim	Material that exhibits magnetic attraction to a magnet.
12. Shunt(s)	A direct permanently joined connection between the pickup shoe to the motor brush.
13. Stock	Any part or condition that normally comes with the car as manufactured.
14. Stock Replacement	Part that is designed to replace an existing Stock part. The stock replacement part must fit without modification to the car or chassis and must be available by April 15 th .
15. Electrical systems	Any component that contains current while power is applied to the car.
16. Bottom Surface	The portion of any part of the car that is closest to the track when the car is placed in an operational mode on the track after the car is built.
17. Polymer Magnets	Bonded magnets that are made from Cobalt or Neodymium powder mixed with an epoxy, plastic, or polymer binder. The manufacturing process involves combining Neodymium or Cobalt powder with an epoxy, plastic, or polymer binder and compressing the mixture in a press and curing it to final shape with no subsequent machining allowed (except were indicated per car class).
18. HOPRA Approved	The Executive Committee has the right to declare the legality of a product.
19. Stock armature	Armature as it comes from the original manufacturer. Must be readily available. Minimum ohms requirements are set per class. (See Appendix for more details)
20. Hot Stock armature	A modified Stock armature. Minimum ohms requirements are set per class. (See Appendix for more details)
21. Car(s)	A fully assembled H.O. scale 4-wheeled vehicle as it is produced by its manufacturer and adhering to all HOPRA rules. These 'Vehicles' must be able to run on H.O. tracks without additional parts added after the manufacturing and assembly processes have been completed. The 'car' must have an option of being sold fully assembled or in kit form which includes all the parts necessary to complete one, single, fully assembled, scale vehicle.
22. Chassis	H.O. scale slot car "frame" designed for current H.O. slot car track competition as it is produced by the manufacture and adheres to all other rules. HOPRA Approved chassis are outlined in each class. (See Appendix for more details)



23. Chassis clip	Clip used to hold the car together and must not touch the magnets or affect the magnetic field. They do not contain/hold the electrical system. Not considered part of the chassis. Must be readily available and follow Appendix guidelines.
24. Magnet retaining clip	Clip used to retain/hold the magnets and/or bushings/bearings in place in the chassis. Not considered part of the chassis. Must be readily available and follow Appendix guidelines.
25. Bulkhead	Barriers between various parts of the car that are solid and help the integrity of the chassis or car structure by increasing rigidity. Contains and/or holds the bushings/bearings and may also retain/hold magnets in place. Not considered part of the chassis. Must be readily available and follow Appendix guidelines.
26. Endbell	Contains and/or holds the electrical system and/or bushings/bearings. Not considered part of the chassis. Must be readily available and follow Appendix guidelines.
27. Timing bracket	Designed with the purpose of creating adjustable timing for the endbell and may also retain/hold magnets in place. Does not contain or retain/hold bushings/bearings. Not considered part of the chassis. Must be readily available and follow Appendix guidelines.
28. T-jet Top Plate	Forms the upper housing of the "pancake motor" enclosing the magnets, armature, commutator and brushes. It also supports the gear plate assembly, which transfers power from the armature to the axle. Not considered part of the chassis. Must be readily available and follow Appendix guidelines.



22. NATIONAL EXECUTIVE COMMITTEE PROCEDURE GUIDELINES

- Proposals for all rule revisions and/or new rules shall be submitted to the members of the National Executive Committee in writing and forwarded directly to the National Director no later than June 1st for voting at that current year Nationals. It is then the National Director's responsibility to distribute the proposals to all active National Executive Committee members for discussion and testing. Proposals submitted after this date must be submitted by at least three (3) members of the National Executive Committee to be considered for an emergency vote.
- After June 1st all submitted rule proposals will be distributed by the National Director to the National Executive Committee members for comments. It is recommended that the National Executive Committee members be given a time period of no less than two (2) weeks to review the proposals and return any comments back to the National Director. The National Director will then be responsible for distributing all pertinent comments to all active National Executive Committee members. The comment procedure may be waived as seen fit by the National Director if deadlines do not allow time for the comment process.
- It is recommended that National Executive Committee members be given a time period of no less than two (2) weeks to review rule proposals and/or comments before being required to cast their votes. Votes on rule proposals shall be forwarded by National Executive Committee members directly to the National Director. It is then the National Director's responsibility to distribute the votes and results to all active National Executive Committee members.

23. NATIONAL EXECUTIVE COMMITTEE PROCEDURE RULES

- An absolute majority vote shall be necessary to pass or defeat a proposal. Abstentions shall not be counted as eligible votes and will be counted as a violation of Section 21, #7. Only in an emergency situation as declared by the National Director, when time deadlines do not allow for a re-vote, can this procedure be waived. In the event of an emergency situation where a tie vote exists, the National Director will be allowed to break the tie vote. Definition of absolute voting: An absolute majority requires 50% + 1 of the total potential voters in order to pass.
- A 2/3 majority vote by the active members of the National Executive Committee shall be necessary to overturn a decision rendered by the National Director.
- In the event that the National Director cannot fulfill the term of office, the Assistant National Director shall be appointed to take over the office of National Director for the remainder of the current term. The National Executive Committee shall elect from within itself, a new Assistant Director by a simple majority vote.
- Outstanding rule proposals, revisions, and new parts submissions shall be voted on by the National Executive Committee no later than December 15th of that year.



9. The HOPRA National Rules shall be published no later than January 15th and be effective for that year's National Championship Race.

10. The National HOPRA Membership packages will include the following:

<u>Membership Package</u>	<u>Family Member Package</u>	<u>Lifetime Member Package</u>
\$15.00 (yearly expires June 1st each year) <ul style="list-style-type: none">o Digital Rulebooko Membership Cardo Nationals Flyer Mailingso Newsletters (if published)o Member Discountso 2- HOPRA Stickers	\$5.00 (For additional immediate family members) <ul style="list-style-type: none">o Membership Cardo Nationals Flyer Mailingso Newsletters (if published)o Member Discountso 1- HOPRA Stickers	\$325.00 (nontransferable) <ul style="list-style-type: none">o Digital Rulebooko Membership Card including an exclusive permanent member ID number.o Numbered Lifetime plaqueo One free support class entry per year, regardless of racer statuso Nationals Flyer Mailingso Newsletters (if published)o Member Discountso 2- HOPRA Stickerso Other sponsored merchandise *where available

11. An annual accounting of HOPRA memberships shall be presented and published by the Membership Director or an appointed Senate Member each year at the National Championship Races.
12. The content and Logos in this rulebook are copyrighted symbols of H.O. Professional Racing Association (HOPRA). See page 32 for more information.

2. GENERAL RULES

1. All magnets must be "HOPRA Approved" and made from ceramic or polymer magnet material only.
2. No freak or irregular magnets shall be allowed. Ceramic magnets must be within 5% of the standard set submitted. Motor and Traction magnets must be under a set Gauss limit by car class. See car classes for gauss limit information.
3. The number of armature magnets used per car cannot exceed the stock number and cannot be more than two. Each magnet cannot exceed more than .0233"³ and must be a minimum of .0175in³ of total volume.
4. The number of extra magnets used per car cannot exceed the stock number and cannot be more than two. Each magnet cannot exceed .0141in³ and must be minimum of .0125in³ of total volume.
5. The number of flux collectors used per car cannot be more than stock.
6. Any car, which contains more than two magnets, shall not be allowed any flux collectors.
7. The chassis entered must be HOPRA Approved, with magnets being part of the chassis and cannot be substituted. Bulkheads, chassis clip(s), endbell, magnet retaining clip(s), and timing brackets are part of the car and can be replaced after qualifying. The body cannot be substituted except for same color conflicts and at the tech inspector's discretion and approval.
8. All cars/chassis must be readily available and HOPRA approved. See individual class rules for legal chassis.
9. All new cars, chassis and magnet sets must be submitted no later than October 15th to be considered for approval for the following year's National Championship Race. **(See appendix for more details).**
10. Magnets submitted for "HOPRA Approval" are to be considered the "standard" set regarding all technical inspection questions. Meters throughout the organization will be calibrated using these standard magnets provided. These standard sets are to be identical to what is readily available.
11. Chassis/Cars submitted for "HOPRA Approval" are to be considered the "Standard" regarding all technical inspection questions. Changes to the original "Standard" design spec chassis shall be resubmitted for "HOPRA Approval" and will be considered a new chassis or car. All chassis must be molded and no after production machining is allowed except where specifically allowed by class rules.
12. No broken chassis will be allowed to enter the race except for body mounts and/or pick up shoe bumper guards. Guide pin bumper must not be broken.
13. A non-adhesive, non-magnetic, separate, and easily removable material can be used to restrict the movement of magnets in the chassis except for where not allowed per class rules.
14. The minimum allowable wheelbase is 1 ¼ (1.250) inches.
15. The maximum allowable width of the car is 1 5/16 (1.3125) inches.
16. The maximum allowable length of the entire car is three (3.00) inches.
17. Only one guide pin per car shall be allowed.
18. The maximum allowable lateral movement of the front axle is 1/32 (.03125) inch and may not exceed general rule 15 when extended to the furthest point.





19. During the race, any individual part of the car may be replaced. The chassis and body are not considered individual parts. The Race Director or Technical Inspector has the right to inspect any car after repairs have been made. If repairs are necessary, they shall be made before the car may re-enter the race. The repairs may be made during lane change periods or on the driver's race time. The race shall not be stopped for repairs unless the Race Director has declared a track call specifically to allow for repairs.

20. The body must be painted, and rear wings/spoilers may be added for aesthetics only. Overall height of the car and mounted body cannot exceed 3/4" (.750"). This height will be measured with the body mounted on the car as it sits on the track.

21. The body must cover the chassis, tires and wheels when viewing the car from above except through legal openings (i.e., windows, etc.). No body cutting except for wheel openings. Open wheel bodies are only allowed in Stock Class. This rule does not apply to the Vintage T-Jet car class as it is subject to its specific body regulations.

22. Any car without a body or with an interfering body will not be allowed to continue to run.

23. Cars must be equipped with four tires, which touch and roll when checked on a test track with no or low rails.

24. The driver has the final responsibility to prove the legality of their car.

25. Every car entered may be required to submit to a post-race technical inspection. Failure to comply will result in immediate disqualification of the car and entrant and forfeiture of entry fees paid for that entry.

26. If necessary, a vote by the National Executive Committee members present shall determine the final interpretation and enforcement of all rules. **If it does not appear in this rulebook, it is not legal for HOPRA competition.**

27. All items to be added to the agenda for the open meeting must be submitted in writing or email to the National Director no later than June 1st. Any additions after that time must be approved by at least three (3) members of the National Executive Committee.

28. The use of lights on cars in National Championship competition is not allowed.

21. OFFICIALS & MEMBERSHIPS

1. Each state or group of states that sanctions a state or regional HOPRA sanctioned HO slot car racing series of at least five races involving at least two or more HOPRA car classes; which are open to all participants; which are advertised by flyers or ads in appropriate publications prior to their scheduled running; the results of which are published in a like manner and can be verified; may be represented on the National Executive Committee by two members. These members shall reside in the state or group of states, which they represent and shall be a current HOPRA member in good standing. New Executive Committee seats shall be requested in writing and forwarded to the National Director 90 days prior to the National Executive Meetings; so as to verify eligibility by the National Executive Committee. All new Executive Committee seats shall be placed on probationary status for a period of one year.
2. Voting protocol for state/regional National Executive Committee Representatives elections and rules proposals is the following:
 - a. It shall be the decision of each state or group of states to set term limits its National Executive Committee Representatives.
 - b. The voting process for state/regional representatives would be the following: current HOPRA members in that state or group of states would be polled and the person receiving the majority of votes would become the state/regional representative.
 - c. For rules proposals/changes and other issues, state/regional representatives would be required to contact all current HOPRA members in their state or group of states to get their feedback on the particular item(s). The representatives would then cast their vote according to the majority of the current HOPRA members in their state or group of states.
3. Each state or group of states must have at least 5 paid members per executive committee seat/per year to maintain each seat. Members under the Family Membership discount are counted as one unit. To be a HOPRA Executive Committee member you must be a current HOPRA member in good standing. Major manufacturers (i.e., Scale Auto/BSRT, Slottech, Viper Scale Racing, RPMs and Wizzard Products) of cars/chassis and magnets are not eligible for executive committee seats. Major manufacturers may be represented by a non-voting committee member to provide information and be a liaison between HOPRA and the manufacturer. The manufacturer representative shall be appointed by the manufacturer, in writing to the National Director, but may not be the manufacturer themselves.
4. At least one member from that state or group of states shall have attended the previous year's HOPRA National Championship Race in order to qualify for National Committee representation.
5. Each state or group of states is encouraged to stage a public service or fund-raising event each year to promote better public relations. Such an event can replace one event in qualifying for a National Executive Committee seat.
6. Each state or group of states will donate \$100 to help support the HOPRA National Champion Race event.
7. It is the duty of the National Executive Committee to establish rules for the annual National Championship Race; to assist in the running of each state's series if needed; to settle all matters of dispute related to official HOPRA businesses; to help insure a solid racing program within every phase of HOPRA; to help promote uniformity among the states and in general to promote a feeling of goodwill and sportsmanship within the sport of HO scale slot car racing, with a sense of fair play and the best interest of the sport in mind at all times. Any National Executive Committee member who fails to respond to an issue put before the National Executive Committee by the National Director on two occasions will be removed from the National Executive Committee. This member will not become eligible as a committee member again unless reinstated by an absolute majority vote of the National Executive Committee as to which time they will be considered a new Executive Committee Member.
8. The National Executive Committee shall elect from within itself, by a 2/3 majority vote, a National Director, Assistant Director, Membership Director, Information Director and any other officials and committee heads it deems needed (see page 30 for duties and responsibilities). The National Director may serve up to three consecutive years, and then may be nominated for the position after one year off (unless there are no other nominees for position).



20. NATIONAL CHAMPIONSHIP RACE RULES AND PROCEDURES

1. The National Championship Race shall use the Official HOPRA National Rules as voted on by the National Executive Committee.
2. Bids for future National Championship Events shall be submitted on the official National Championship Race bid form.
3. Bids for the following year's National Championship Race shall be submitted to the National Director prior to the present year's National Championships. Incomplete bids may be submitted (complete bids are preferred). Bids for future National Championship Races may be submitted at any time and will be kept on file for future use.
4. In the event that no bids are received for the next year's National Championship Race, the National Director shall appoint a committee composed of National Executive Committee members to find an appropriate site for holding next year's National Championship Race.
5. National Championship races shall be held on standard HO scale racetracks. No form of "trick" tracks shall be allowed. Any Box Stock car shall be able to negotiate all lanes of the track. If a track is to be used that is not of plastic track (i.e., Tyco, Aurora T-Jet, A/FX), the dimensions of the track (track material, rail type, rail width, rail height, space between rails, slot width, slot depth, space between slots, etc.) must be included in the National Championship publications.
6. It shall be the responsibility of the HOPRA Information Director to coordinate the publication of the HOPRA National Championship Race Report. The Race Promoter(s) and HOPRA National Executive Committee shall be required to furnish all assistance deemed necessary by the HOPRA Information Director. This report shall contain brief summaries of each Championship or other event held at the year's HOPRA Nationals. The finishing order and final lap totals for each participant in each Championship Event shall be included. The liberal use of photographs and graphics is encouraged. This report shall be mailed to all participants and sponsors involved with the HOPRA Nationals, and to all slot car racing trade publications, within 45 days after the conclusion of the HOPRA Nationals.
7. An award for "National Drivers Championship" for the best racer at Nationals. Take the three (3) best finishes from any one driver for the best average finish position for a National Class. This would encourage more participation.
8. Each class payout at a minimum would be a percentage (1st 40%, 2nd 30%, 3rd 20%, 4th 10%) based on the number of entries per class; HOPRA would receive a percentage (10%-20% + \$5 per entry) of the total entries per class before calculating the final payout for each class.

3. BOX STOCK CAR CLASS

This class is divided into two divisions: Inline Motor cars and Can Motor cars.

Eligible Inline Motor cars are: Tomy SG+, AFX Mega G, LifeLike M-chassis, Tyco/Mattel 440x2, Auto World Super III, JAG Hobbies TR-3/NC-2/PR5

Eligible Can Motor cars are: Tomy SRT/Turbo, LifeLike T-chassis, AFX Mega G+, HC Slots Super 7

Rules for both divisions:

1. Only allowed changes to stock, out-of-the-package car is the addition of any non-coated solid silicone, rubber, or urethane replacement rear tires and any double or single flanged replacement wheels.
2. Every part will be exactly as it comes from the original manufacturer for that particular car type/model, including all gears, axles, pickup shoes, pickup shoe springs, motor brushes and motor springs. No cutting or reaming of chassis, axle holes or any bushings. Axle diameter and length must remain stock. No truing, lightening or other modifications to front wheels/tires. See #9 for minimum front tire size for each car type/model. Rear rims and slip-on tires, per #1, are only allowable changes.
3. Armatures will be in factory stock condition as it comes from the original manufacturer for that particular car type/model. No tampering with stock condition.
4. Absolutely no cutting, lightening or any other modification allowed to car's body. Re-paints are permitted. Body types (i.e., stock car, sports car, open wheel) are to be determined on a race-by-race basis.
5. Polishing and lubricating of metal components are permitted.
6. Removal of protective plastic heat shields is permitted.
7. Guide pin may be trimmed for clearance purposes.
8. Pick-up shoe spring tension may be adjusted.
9. Minimum diameter for front tires, per particular car type/model:
 - a. Tomy SRT, Super 7, and all JAG -- .385
 - b. AFX Mega G and Mega G+ -- .375
 - c. Tomy Super G+ -- .385
 - d. Tomy Turbo -- .380
 - e. LifeLike T-chassis -- .370
 - f. LifeLike M-chassis -- .370
 - g. Auto World Super III -- .410
 - h. Tyco/Mattel 440x2 -- .410



4. SPEC STOCK CAR CLASS RULES

Legal chassis are: BSRT G3/G3R/G3RS/G3RSB, Slottech T1/T2/T3, Wizzard Storm/Fusion, Viper V1/V3, RPMs Ghost Cat

- 1. Chassis must be stock and cannot be modified in any way except to cut off molded in body posts and drill holes for axle retainers.
- a. All magnets must be "HOPRA Approved" stock ceramic or "compression molded polymer" and cannot be cut.
- b. The gauss reading of the traction or motor magnet shall not exceed the following criteria. This is taken after a 5 min cool down period and at the lowest point on each magnet as it runs parallel to the rail. Any reading above these figures will be cause for disqualification or rejection at tech.

TRACTION: 1650 gauss maximum MOTOR: 1285 gauss maximum
"HOPRA Approved" Compression Molded Magnets for Spec Stock, Spec Jet, and Spec Racer Car
Magnets are listed by magnet manufacturer and may be used in all chassis adhering to class rules

Manufacturer	Part #	Description
BSRT	#277 #290 #284	G-Force H-D Motor G-Force Motor G-Force Traction
Slottech	#81C #86C	G6 Motor G6 Traction
Wizzard	WS60 WS61 FS40 FS41 FS70	Stock Storm Motor Stock Storm Traction Fusion Polymer Motor Fusion Polymer Traction
Viper Scale Racing	12000 12001 22737 22816 11024 11315	Pro 4 Motor Pro 4 Traction Pro 4 Maxi Traction Viper Pro 4™ SR Motor Viper V3 Traction Viper V3 Step Traction Viper SR2 Motor
RPMs	RPMSHF-LDM4 RPMSHF-L4-T RPMSHF-LDM4-SB RPMSHF-LDM4-HR	Hyper-Force Motor Hyper-Force Traction Hyper-Force Motor Magnets (Skinny Bar) Hyper-Force Motor Magnets (High RPMs)

- 2. The armature must be stock. The minimum ohmage allowable shall be 5.80.
- 3. The electrical system must be stock or stock replacement for the car. Plated parts are not allowed unless they are stock for the car. The use of big foot brushes or twisted endbells is not allowed.
- 4. The rear axle and guide pin must be stock. 7/23 gear ratio only is allowed. No restriction on front wheels, tires and axle. Rear tires shall be any non-coated solid silicone, rubber or urethane replacement tires. Rear wheels shall be any double or single flanged replacement wheels.
- 5. Only the mass-produced injection-molded hard plastic bodies are allowed. Bodies too be determined prior to the race and must follow the below conditions:
 - a. Bodies cannot be cut or modified in any way.
 - b. Clip must be attached to the chassis with or without center piece of mounting clip. Stock mounting position only.
 - c. Bracket may be glued to chassis.
 - d. All bodies can use glue dots to more firmly secure body to chassis mounts.
- 6. The use of glue shall not be allowed on the magnets or to retain the magnets to the chassis.
- 7. This class is open only to Amateur class drivers [See Amateur eligibility requirements]



19. TRACK AND EQUIPMENT GUIDELINES

- 1. All tracks used for HOPRA competition should be situated so as to provide for complete marshaling positions. These positions should not interfere with drivers or the driver's view of the track.

- 2. All tracks used for HOPRA competition should allow for driving positions that provide for a clear, unobstructed view of the entire track and adequate space for controllers and other trackside equipment.
- 3. All tracks used in HOPRA competition should have padded retaining walls.
- 4. The following are recommended lane colors from inside to outside at driver's station starting from left to right.

<u>4</u> Lane	yellow
	blue
	white
	red
<u>6</u> Lane	yellow
	blue
	orange
	green
	white
	red

- 5. Recommended lane stripe of 3/16 or narrower.
- 6. Control hookups should be white, black, and red from left to right.



18. TRACK AND EQUIPMENT RULES

1. All tracks shall have four or more color-coded lanes in operating condition without any "dead" spots and contain retaining walls of at least one inch in front of the drivers and two and one-half inches everywhere else. Dead spots are locations on the track that contain a different electrical conductivity that is not equal to the rest of the track.
2. Eighteen (18) volt minimum, nineteen (19) volt maximum filtered power supplies, battery or combination thereof shall be used at the HOPRA National Championship Race. Twenty (20) volt filtered power supplies shall be used for Vintage T-Jet class. Twelve and a half (12.5) volt minimum, 13 and a half (13.5) volt maximum filtered power supplies shall be used for Spec Jet class. Power supplies must meet the following specifications of 20 amps minimum per a 4-lane track with 5amps min per lane.
3. All tracks shall be equipped for alligator type hookups and dynamic braking.
4. Repairs and/or modifications to the track shall be approved by the track's owner or the highest-ranking HOPRA official present at the time.
5. All tracks used for HOPRA competition shall have clearly marked track sections for determining the number of sections run at the end of the race.
6. Tire dressings ("glue") of any kind may not be applied to the track in any fashion. The track surface must remain free of anything other than the track surface, environment conditions (i.e., dust), dirt and debris from normal racing conditions. Dressings may not be applied directly to the track in any fashion. Application of dressings to the car in such a manner resulting in the damage of the track, other cars, or the obvious impediment of other cars, is grounds for lap penalties and/or disqualification as determined by the Race Director or other high-ranking HOPRA Official.
 - a. Track Cleaning – HOPRA will take every effort to present the same track conditions to all racers. Therefore, during practice periodically and before each Consi, Semi, Supper Semi, and Mains the track will be dry ragged. This will be done by a HOPRA official or their designee.
 - b. For Gravity competition ONLY - The use of double-sided 3M "sticky" tape will be applied in a main straightaway (placed on each side of the rail for each line). Tape will be replaced before each Consi, Semi, Supper Semi, and Main. During practice Tape will be replaced every 20 minutes. This will be done by a HOPRA official or their designee.
7. Only the track power may be used to power the cars.
 - a. The voltage output of the controller may not exceed the track voltage provided at the White driver's panel post.
 - b. No controller output storage may be used i.e., Capacitors attached to the controller output wire (Black Lead)
 - c. Controllers cannot have batteries.
8. All tracks used for HOPRA competition shall be equipped with reliable, computer scoring system running Slottrax © software. In all situations, the scoring system is considered correct unless it can be proven otherwise, the computer shall be corrected if necessary (such as when a car crosses on the wrong lane). If a lap can be verified by a track marshal as having been missed or added, the Race Director must be notified to correct the count.
9. Each track used for HOPRA National Championship race shall have the Race Director's station located a track side, situated to provide a clear, unobstructed view of the entire racing surface. The Race Director's station shall be equipped with a device to provide the Race Director with direct physical and simultaneous control of track power and segment time. The Race Director's only responsibility shall be to control the racing action on the track. The Race Director shall have no marshaling responsibilities. Another individual shall be employed as Race Scorer/Announcer whenever available manpower permits.

5. SPEC RACER CAR CLASS RULES

Legal chassis are: BSRT G3/G3R/G3RS/G3RSB, Slottech T1/T2/T3, Wizzard Storm/Fusion, Viper V1/V3, RPMs Ghost Cat

1. The chassis must be stock, readily available, "HOPRA Approved" and cannot be machined, sanded or cut except to provide the following:
 - a. Add, remove, or re-add body mounts.
 - b. Reinforce and/or replace pickup tabs.
 - c. Add axle retainer.
2. All magnets shall remain in their stock location. No material or method may be used to restrict the movement of the magnets.
 - a. Only "HOPRA Approved" Compression Molded polymer traction and motor magnets may be used, see SPEC STOCK CAR CLASS RULES for specific manufacturer part numbers.
 - b. The gauss reading of the traction or motor magnet shall not exceed the following criteria. This is taken after a 5 min cool down period and at the lowest point on each magnet as it runs parallel to the rail. Any reading above these figures will be cause for disqualification or rejection at tech.
TRACTION: 1650 gauss maximum MOTOR: 1285 gauss maximum.
3. The guide pin can be a stock replacement. It may be glued in place but shall remain in any one of the stock positions.
4. The armature must be stock or a hot stock. The minimum ohmage allowed shall be 5.80.
5. There are no restrictions on the armature bushings or axles. Ball bearings are not allowed.
6. Gears ratio must be a 7-tooth pinion with a 23-tooth crown gear. No metal gears allowed.
7. There are no restrictions on front wheels, tires and axle.
8. Rear tires shall be any non-coated solid silicone, rubber, or urethane replacement tires. Rear wheels shall be any double or single flanged replacement wheels.
9. Electrical systems shall be stock or stock replacement. Adjustable brush tension is allowed. Physically attaching brushes to springs (using glue or other substance) or spring arm is allowed. Plated parts are allowed. Shunts are not allowed.
10. The use of glue shall not be allowed on the magnets or to retain the magnets to the chassis.



6. SPEC JET CAR CLASS RULES

Legal chassis are: BSRT G3/G3R/G3RS/G3RSB, Slottech T1/T2/T3, Wizzard Storm/Fusion, Viper V1/V3, RPMs Ghost Cat

1. The chassis must be stock, readily available, "HOPRA Approved" and cannot be machined, sanded or cut except to provide the following:
 - a. Add, remove or re-add body mounts.
 - b. Reinforce and/or replace pickup tabs.
 - c. Add axle retainer.
2. All front and rear weights and hardware must stock or stock replacement.
3. Weight kits must contain 1 or 2 front weights and 2 rear traction weights made of brass only. Total weight kit, including mounting hardware, must weigh a minimum of 1.8 grams.
4. All magnets shall remain in their stock location. No material or method may be used to restrict the movement of the magnets:
 - a. Only "HOPRA Approved" Compression Molded polymer motor magnets may be used. see SPEC STOCK CAR CLASS RULES for specific manufacturer part numbers.
 - b. The gauss reading of the motor magnets shall not exceed the following criteria. This is taken after a 5 min cool down period and at the lowest point on each magnet as it runs parallel to the rail. Any reading above these figures will be cause for disqualification or rejection at tech.
MOTOR: 1285 gauss maximum.
5. The guide pin can be a stock replacement. It may be glued in place but shall remain in any one of the stock positions.
6. The armature must be stock or a hot stock. The minimum ohmage allowed shall be 5.80.
7. There are no restrictions on the armature bushings or axles. Ball bearings are not allowed.
8. Gears ratio must be a 7-tooth pinion with a 23-tooth crown gear. No metal gears allowed.
9. There are no restrictions on front wheels, tires and axle.
10. Rear tires shall be any non-coated solid silicone, rubber, or urethane replacement tires. Rear wheels shall be any double or single flanged replacement wheels.
11. Electrical systems shall be stock or stock replacement. Adjustable brush tension is allowed. Physically attaching brushes to springs (using glue or other substance) or spring arm is allowed. Plated parts are allowed. Shunts are not allowed.
12. The use of glue shall not be allowed on the magnets or to retain the magnets in the chassis.



8. A "Track Call" may be invoked by the Race Director if they determine that a hazardous or unfair situation such as lap counter or other track equipment failure, un-marshal-able car (cars that are out of the immediate area or under the track and cannot be replaced quickly, power shall be turned back on as soon as the car is in hand) exists. Power and segment time will be suspended during a "Track Call". During this time, no car repairs, unless authorized by the Race Director shall be allowed and will result in lap penalties and/or disqualification as determined by the Race Director or other high ranking HOPRA Official. Drivers may not declare a "Track Call", or they will be penalized one (1) lap per offense.
9. If a driver or marshal damages another car while replacing the car on the track, power to the track shall be turned off to give the offended driver time to put the car back into running order with a time limit on repairs equal to the length of time of the segment being run.
10. The penalty for a de-slot should only be the time it takes to marshal the car(s). A driver shall not be penalized a loss of lap or laps if their car misses the lap counter due to a de-slot or improper marshaling, nor shall a driver gain a lap by another car passing over their lap counter for the same. This can only be recognized by an official marshal or race director. Should a car miss the counter, it is up to the race director to add the deserved lap to the drivers total during or at the end of the segment.
11. At the conclusion of each race, the cars shall be left on the track where they stopped after the power was shut off until the order of finish is positively determined, and the Race Director authorized their removal. Removal of cars prior to the Race Director's authorization will result in the offending car(s) being credited with running 0 sections.
12. The Race Director has the right to ask for the removal of a car from the track, which is excessively interfering with other cars, damaging the track and in any manner, or unnecessarily disrupting the race. The car will only be allowed back on the tack after repairs have been made to correct the problem.
13. All Const. Races will have an equal practice time of between one and two minutes, two minutes of racing per segment, and minimum one and one-half minute breaks between segments.
14. All Semi races will have an equal practice time of between one and three minutes, three minutes of racing per segment, and one and one-half minute breaks between segments.
15. All Super-Semi races will have an equal practice time of between one and four minutes, four minutes of racing segment, and two-minute breaks between segments.
16. The Main will have a practice time (for main event participants only) of a maximum of 15 minutes. Practice times will be determined by the race director. Main will have five minutes of racing per segment, and two and one-half minute breaks between segments.
17. Each race shall begin within 30 seconds after the completion of practice.



17. RACING RULES AND PROCEDURES

1. The order of entry determines starting position in qualifying, the first entry qualifies first.
2. Method for qualifying:

Individually timed laps will be used for qualifying. Each driver qualifies individually and may start on any lane. Drivers are also allowed to switch lanes at any time during their qualifying run. Each driver will be given an equal time to qualify between one and two minutes. A driver's fastest lap time raced will be used to determine their starting position in the race with their back-up time used to break any ties. Each driver should be ready to qualify when the time of the person preceding them has run out. They will be given a maximum of thirty seconds before their qualifying time starts.

3. No "bye" will be issued in qualifying. The car must complete one lap to count as a qualifying time. If the car does not complete one lap, the driver may re-qualify at the bottom of the entry list. After the last scheduled driver, any driver needing to re-qualify must be at the track within two minutes to complete their final attempt. Drivers who don't qualify will start the race at the back of the field. Late entries that miss qualifying will also start the race at the back of the field.
4. There are two systems of racing procedures:
 - a. The two-bracket system - Drivers are divided into two groups called A and B with the fastest qualifier placed in group A, the second fastest qualifier placed in group B, the third fastest qualifier placed in group A, etc. Initially each race, except the first race in each group is 50% occupied by drivers winning sit-out positions. These races are then filled out by the top finishers making move-ups. The preliminary races in each group are called Consis. Races and the last race in each group is called a Semi, the winners of the Semi plus the drivers with the highest lap totals move up to fill the Main, which is the final race of the event.
 - b. The four-bracket system - This system may be used if there are 24 or more entries racing on a four-lane track, 36 or more entries racing on a six-lane track, or 48 or more entries racing on an eight-lane track. In this system, drivers are divided into four groups called A, B, C, and D respectively, the fifth fastest qualifier is placed in group A, the sixth fastest qualifier in group B, etc. The races are set up the same way that they are in the two-bracket system and the method of move-ups remains the same as the two-bracket system until the Super-Semis. Then each top finisher from the A and C semis is placed in one Super-Semi called the A-C Super-Semi and each top finisher from the B and D semis is placed in the other Super-Semi called the B-D Super-Semi and then the next highest finishers in all of the semis shall fill out the remaining open positions. The winner of each Super-Semi plus the drivers with the highest lap totals from the Super-Semis move up to fill out the Main which is the final race of the event.
5. Initially, lane choices will be determined by qualifying with the fastest qualifier having first choice, etc. Drivers who move up will no longer choose lanes based on qualifying but instead by their order of finish in the previous race. These drivers will choose lanes after those winning sit-out positions.
6. In all HOPRA events, each driver will have the opportunity to drive on all lanes during the race. This shall be achieved by drivers moving to adjacent lanes in a systematic manner (it is recommended that drivers move from the outer-most lane to the inner-most lane). A race will consist of as many prescribed segments as lanes used.
7. During lane changes, the power to the track should be off. During this lane change period, the driver is responsible for changing their lane tape and replacing the car to the track at the location it stopped at the end of the previous segment. Marshals or others shall not remove any car from the track after the conclusion of a segment unless specifically authorized to do so by the driver of that car. Marshals shall assist drivers in making lane changes when asked to do so. Replacing a car in an advantageous position will result in lap penalties and/or disqualification as determined by the Race Director or other high ranking HOPRA Official. When a car is removed from the track during racing, the same conditions apply.



7. VINTAGE T-JET CAR CLASS RULES

Legal chassis and top plates are: Any Original Aurora thunder-jet, T-Dash, Wizz-Jet - Blizzard is NOT legal

All General rules are applicable to this class and shall be followed.

1. Car including body must weigh between 19 and 24 grams
2. Electrical system must be copper material and be stock or stock replacement. Plated chassis electrical components or pickup shoes parts are not allowed. Brush tensioners and shoe hanger plates may be bent to adjust shoe tension. Shunts are not allowed.
3. Chassis holes may be closed or opened for proper clearance.
4. Brushes must be copper and may be scored with an X or line.
5. Any stock T-Jet pancake armature that is Aurora 2 lam, Dash 2 or 3 lam, or OS3 is allowed. The armature may be balanced and trued with a minimum 16.0 ohms (measured pole to pole with armature removed from car and checked after a 5-minute cool down). Washers or spacers are allowed on the armature.
6. Magnets must be ceramic and readily available. Magnets may be sanded to fit the chassis. The distance between the magnets must be a minimum of .700". Any nonmagnetic materials may be employed to restrict the movement of the magnets and may be glued to the magnet. Material is not allowed under or on top of magnets.
7. Any solid brass stock or stock replacement gears may be used and must be a minimum of .045" thick. Only 14T (motor pinion), 24T(idler), 24T(driven), 9T (drive pinion) are allowed. Any crown gear is allowed and must be stock or stock replacement, 15T, and installed in the car the diameter must not be smaller than .300". Crown gears may be trimmed or spaced to adjust for proper gear mesh.
8. Gears cannot be cut, lightened, drilled, chamfered, or relieved. Polishing/deburring is allowed. Gears may be glued or soldered on the shaft.
9. There are no restrictions on axles, drive gear shafts, wheels or tires. Rear wheel weights are not allowed.
10. There are no restrictions on front ends except they must be stock or stock replacement and may be spaced on the outside of the frame rail only.
11. Pickup shoes shall be stock or stock replacement. Ski shoes are not allowed.
12. Pickup shoes springs may be any material and must be cylindrical in shape.
13. Gear plate rails may be trimmed to the plane of the top plate.
14. The guide pin must be plastic material stock or stock replacement. It may be countersunk and glued in place but shall remain in the stock position.
15. With exception of the guide pin location, the use of glue shall not be allowed on the chassis or top plate.



1. All bodies shall resemble a 1:1 or concept car and originally manufactured with mounting posts in the front and back for 2 screw mounting. No open wheel bodies are allowed. All bodies must be mounted with 2 screws.

2. Body must be plastic from injection molding, resin cast, or 3D printed and cannot contain any ballast, fillers (other than pigment), added weight, or magnetsm.

3. The body must cover the front and rear of the chassis when viewed from above.
4. When viewed from the back, front, or side, the line in upper surface of the top plate (not including rails) must be shielded by the body.
5. No additional weight may be added to bodies. Glue is allowed for repairs and windshield installation.

6. Bodies may be repaired, lightened, and lowered as long as they fit the existing rules.

7. Bodies cannot be manipulated by heat to intentionally warp.

8. Wheel-wells may be opened but must not be exaggerated past a 1/8" size around the tire from the side.
9. Complete front windshields are required and must be molded, vacuum formed, or injection molded plastic. Side and/or rear windows may be removed.



16. DRIVER RULES

1. The use of abusive language and/or misconduct by drivers toward marshals and/or other drivers will not be tolerated at the race site. A verbal warning will be given by the HOPRA director to the violator on their first offense, followed by disqualification on their second. Any act of violence is grounds for immediate disqualification. Any driver that marshals their own car shall receive a lap penalty or be disqualified if another driver's car is damaged.
2. Un-sportsmanlike conduct on the part of any participant (including bystanders and/or spectators) at a HOPRA event may result in lap penalties and/or disqualification as determined by the Race Director or other high-ranking HOPRA Officials. Verbal abuse or profanity will not be tolerated. Serious or repeat violations of un-sportsmanlike conduct by any participant may result in the participant being prohibited from future HOPRA activities as determined by a vote of the HOPRA National Executive Committee.
3. All drivers must take turns serving as turn marshals unless otherwise authorized by the Race Director. Substitute marshals must be acceptable to the Race Director. Failure to fulfill marshaling responsibilities may result in lap penalties and/or disqualification as determined by the Race Director or other high-ranking HOPRA Officials. It is the duty of the marshals to replace de-slotted cars. Marshals must not repair cars but shall return the car along with the damaged parts (if available) to the driver.
4. There will be no driver changes. Drivers shall use the car they submit to tech.
5. A line minimum of 1' (one foot) from the track table shall be present in front of which driver shall stand. Special accommodations can be made.
6. Any driver is eligible to compete in the Unlimited, Polymer Modified or Modified class as the HO Nationals. Only Amateur Stock Class, either Amateur or Pro.
7. Driver's Amateur class eligibility for the HO Nationals.
 - a. Any Amateur driver that has won a National Championship class or finished in the Top 4 three or more times at the Nationals in a Championship class will be classified as a Pro.
 - b. If you enter the Pro Super Stock National Championship Race you will be unable to ever race in an Amateur Class again.
8. Any unknown driver wishing to enter the Amateur class will be given the benefit of the doubt and allowed to compete.
9. Protests shall be made in writing to the highest-ranking National Executive Committee member at the race within one hour after the occurrence. A fee equal to the protestor's entry fee must accompany the protest. The protest will be acted upon by the National Executive Committee members present and their decision will be final. If the protest is won, the protest fee will be returned. A protest must follow these guidelines to be considered valid. If a protest is denied the protest fee will go to the HOPRA National Organization.



15. BEST APPEARING RACE CAR RULES AND PROCEDURES

1. The Best Appearing Race Car competition is, by definition, "A competition to determine the best-looking cars that are entries in a racing event". Before any entry may receive a Best Appearing Race Car Award, he or she shall also be an entry for the appropriate racing class, comply with all requirements of Technical Inspection for the Class, complete a qualifying run, and participate to the fullest extent possible in the races scheduled for that class. Obvious "sandbagging" during racing competition in order to minimize the chances for damage to the car is not in the spirit of the Best Appearing Race Car competition and may result in disqualification from the Best Appearing Race car competition as determined by the Race Director or other high ranking HOPRA Official.
2. Each Best Appearing Race Car entry shall compete during qualifying and racing in the same configuration as presented for Best Appearing Race Car judging. A separate race body is specifically not allowed.
3. For Best Appearing Race Car judges shall be chosen by the Race Promoter from among those not entering the Best Appearing Race Car competition. Each judge shall be from a different region of the country. The Best Appearing Race Car judge shall assign points to the Best Appearing Race Car cars individually. The highest and lowest of the four judges' individual scores will be dropped, and the sum of the two remaining scores shall be an entry's final Best Appearing Race Car points total. The maximum possible score per judge is 50 points and the maximum possible score per entry is 100 points.
4. In the case of a tie after judging, the high and low scores shall be used as the tiebreaker. If a tie still exists, then the racer's finishing position in their class shall be used as the tiebreaker. If a tie still exists, then the racer's qualifying position in their or her class shall be used as the tiebreaker. If a tie still exists, the National Director shall appoint a panel of Media Representatives, or other impartial individuals as can be secured, and empower this panel with the responsibility to break any ties that remain.
5. Appearing Race Car judges shall use the following points system to determine Best Appearing Race Car placing:
 - a. Exterior Detail (0-15 points) - Areas to be considered include numbering, lettering, decals, etc.
 - b. Added physical details and interior details are specifically excluded from judging as outlined above in Best Appearing Race Car #3.
 - c. Paint and Finish (0-15 points) - Quality of the paint, neatness of the application of the paint to the body and evenness of the coat will be considered here.
 - d. Overall Impression (0-20 points) - Realism and the general aesthetic quality of the car will be considered here. Scale replicas and original paint schemes of equal quality shall be given equal consideration.
6. Once an individual car has won any Best Appearing Race Car event it shall become ineligible to compete in another Best Appearing Race Car event.



8. SUPER STOCK CAR CLASS RULES

Legal chassis are: BSRT G3/G3R/G3RS/G3RSB, Mattel/Tyco 440 X2, Micro Speedworks T+, Slottech T1/T2/T3 and T1X, Wizzard-Patriot P2/P3/Scorpion/Storm/Storm CH22/Fusion, Viper V1/V3, RPMs Ghost Cat

1. The chassis must be stock, readily available, "HOPRA Approved" and cannot be machined, sanded or cut except to provide the following:
 - a. Add, remove or re-add body mounts.
 - b. Reinforce and/or replace pickup tabs.
 - c. Add adjustable Brush tension.
 - d. Add axle retainer.
2. The guide pin can be a stock replacement part. It may be glued in place but shall remain in any one of the stock positions.
3. All magnets used shall be stock or stock replacement ceramic "HOPRA Approved" and cannot be cut. The gauss reading of the traction or motor magnet shall not exceed the following criteria. This is taken after a 5 min cool down period and at the lowest point on each magnet as it runs parallel to the rail. Any reading above these figures will be cause for disqualification or rejection at tech.
TRACTION: 1500 gauss maximum MOTOR: 1000 gauss maximum.
4. Mattel/Tyco 440 X2 traction magnets must be of matching polarity.
5. All magnets shall remain in their stock location. No material or method may be used to restrict the movement of the magnets.
6. Any flux collectors used shall be stock and shall remain in their stock location and cannot be modified.
7. The armature must be stock or a hot stock. The minimum ohmage allowed shall be 5.80.
8. Axle bushings are not allowed unless they are stock.
9. There are no restrictions on the armature bushings, gears, axles, wheels and tires. Ball bearings are not allowed.
10. Electrical systems shall be stock or stock replacement. Adjustable brush tension is allowed. Physically attaching brushes to springs (using glue or other substance) or spring arm is allowed. Plated parts are allowed. Shunts are not allowed.
11. The use of glue shall not be allowed on the magnets or to retain the magnets to the chassis.



9. MODIFIED CAR CLASS RULES

Legal chassis are: BSR T T2/G3/G3R/G3RSB, Mattei/Tyco 440x2, Slottech Panther/Panther 02, Thundercat T3, T1X, Tomy AFx Super G+, Wizzard Storm/Fusion, Viper V1/V3, RPMs Ghost Cat

- 1. The chassis must be stock, readily available, "HOPRA Approved" and cannot be machined, sanded or cut except to provide the following:

- a. Add, remove or re-add body mounts.
- b. Reinforce and/or replace pickup tabs.
- c. Add adjustable Brush tension.
- d. Add axle retainer.

- 2. All magnets shall remain in their stock location and cannot be cut.

- a. Only "HOPRA Approved" compression molded polymer traction and motor magnets may be used, see COMPRESSION MOLDED POLYMER MODIFIED CAR CLASS RULES for specific manufacturer part numbers.
 - b. The gauss reading of the traction or motor magnet shall not exceed the following criteria. This is taken after a 5 min cool down period and at the lowest point on each magnet as it runs parallel to the rail. Any reading above these figures will be cause for disqualification or rejection at tech.
- TRACTION: 2230 gauss maximum, MOTOR: 1775 gauss maximum.**

- 3. The use of glue shall not be allowed on magnets or to retain the magnets to the chassis. Other non-magnetic materials may be employed to restrict the movement of the magnets. Any chassis clip used to hold the car together must not touch the magnets or affect the magnetic field.

- 4. The armature must be stock or a hot stock. The minimum ohmage allowed shall be 2.30.

- 5. Electrical systems shall be stock or stock replacement. Adjustable brush tension is allowed. Physically attaching brushes to springs (using glue or other substance) or spring arm is allowed. Plated parts are allowed. Shunts are not allowed.
- 6. Rear tires shall be any non-coated solid silicone, rubber, or urethane replacement tires. Rear wheels shall be any double or single flanged replacement wheels.
- 7. There are no restrictions on the armature bushings (may be glued in). Ball bearings are not allowed.
- 8. There are no restrictions on guide pin, gears, or axles.



14. CONCOURS D'ELEGANCE RULES AND PROCEDURES

- 1. Concours cars entered may be separate entries. Anyone making a Concours entry per person shall be allowed per event style. Cars may be entered for persons not present. Only one Concours entry per person shall be allowed per event.
- 2. All Concours entries shall be in running order when entered and shall be required to run one lap on the designated track to be considered a legal entry. Concours entries shall also comply with all requirements set forth in the Unlimited Car Class Rule, with the following exceptions:
 - a. Concours entries may exceed the maximum width and length restrictions of General Rules #14-16 provided that exceeding these dimensions is appropriate in constructing and HO scale representation of the type of vehicle entered. (i.e., A top fuel dragster may exceed the maximum length of three inches.)
 - b. Added air control devices shall be allowed.
- 3. Four Concours judges shall be chosen by the Race Promoter from among those not entering the Concours competition. Each judge shall be from a different region of the country. The Concours judges shall assign points to the Concours card individually. The highest and lowest of the four judges' individual scores will be dropped, and the sum of the two remaining scores shall be an entry" final Concours points total. The maximum possible score per judge is 50 points and the maximum possible score per entry is 100 points.
- 4. In the case of a tie after judging, the two high and low scores shall be used as the tiebreaker. If a tie still exists, the National Director shall appoint a panel of Media Representatives, or other impartial individuals as can be secured, and empower this panel with the responsibility to break any ties that remain.
- 5. Concours judges shall use the following points system to determine Concours placing:
 - a. Internal Detail (0-10 points) - General appearance, neatness, realism of driver, roll cage or bar, and dashboard along with any other interior details will be considered here.
 - b. Exterior Detail (0-10 points) - Areas to be considered include mirrors, numbering, lettering, decals, headlights, bumpers, engines, and any other exterior detail.
 - c. Paint and Finish (0-10 points) - Quality of the paint, neatness of the application of the paint to the body and evenness of the coat will be considered here.
 - d. Chassis (0-5 points) - General appearance of the work done and neatness will be considered here.
 - e. Overall Impression (0-15 points) - Realism and the general aesthetic quality of the car will be considered here.
- 6. Once an individual car has won any Concours event, it shall become ineligible to compete in another Concours event.



12. UNLIMITED CAR CLASS RULES

- General rules 1 through 13 are not applicable to this class. General rules 14 through 28 are applicable and shall be followed.
- There are no restrictions on chassis cutting. Scratch built chassis' will be allowed.
- There are no restrictions on the type of magnets, magnet material, position of magnets, or number of magnets. Cobalt or Rare Earth type magnets will be allowed.
- There are no restrictions on the armature, bearings, gears, wheels, axles, tires, guide pin and electrical system.
- Any car or device, which is considered hazardous to the track, the marshals, other drivers or other cars, shall be declared illegal and not allowed to run.

13. GRAVITY CAR CLASS RULES

- General Rules 1 through 13 are not applicable to this class. General Rules 14 through 28 are applicable and shall be followed.
- There are no restrictions on chassis cutting. Scratch-built chassis are allowed.
- Magnets are restricted to two motor magnets only. There are no restrictions to the type of magnets, magnet material, or position of the magnets. Cobalt or Rare Earth type magnets are allowed.
- There are no restrictions on the armature, bearings, gears, wheels, axles, tires, guide pin and electrical system.
- The car must pass the Lift Test, unless the track being raced on has non-magnetic rails.

Lift Test defined as the following:

- The lift testing device is a 5/16 piece of O-1 drill rod that is 1.312 inches long and has .004 of additional non-magnet surface. Typically, this additional non-magnet surface can be achieved with layers of tape.
 - To pass inspection, the lift testing device is placed anywhere on the bottom of the car, in a horizontal position, and cannot be held by the car. Testing may require removal of the pick-ups or tires. The tech inspector will lay the pin flat on the table, lower the car to the pin and lift. The lowering, touch of pin and lift is one continuous motion. If necessary, this method will be performed 3 times by the same tech inspector before and after the race unless extenuating circumstance arise.
- Any car or device, which is considered hazardous to the track, the marshals, other drivers or other cars, shall be declared illegal and not allowed to run.



10. COMPRESSION MOLDED POLYMER MODIFIED CAR CLASS RULES

Legal chassis are: BSRT T2/G3/G3R/G3RS/G3RSB, Mattel/Tyco 440x2, Slottech Panther/Panther 02, Thundercat T3, T1X, Tomy AFX Super G+, Wizzard Storm/Fusion, Viper V1/V3, RPMs Ghost Cat

- The chassis must be stock, readily available, "HOPRA Approved" and cannot be machined, sanded or cut except to provide for the following:
 - Add, remove or re-add body mounts.
 - Mount any guide pin holder - guide pin shall remain in any one of the stock positions.
 - Add armature bushings or ball bearings.
 - Drill or cut holes for adjustable brush tension.
 - The bottom surface of the chassis and bulkheads may be sanded flat. However, the bottom bulkhead tabs shall remain naturally connected to the end bells.
 - The pickup retaining tabs on the chassis may be reinforced and/or replaced in their stock position.
 - Add rear axle retainer.
 - Add bulkhead/magnet clip retaining screws.
- All magnets shall remain in their stock location.
 - Only "HOPRA Approved" compression molded polymer magnets may be used, see below for specific manufacturer part numbers. Magnets may be sanded flat on the bottom surface only, so they are flush with the bottom surface of the chassis and bulkheads.
 - The gauss reading of the traction or motor magnet shall not exceed the following criteria. This is taken after a 5 min cool down period and at the lowest point on each magnet as it runs parallel to the rail. Any reading above these figures will be cause for disqualification or rejection at tech.

TRACTION: 2230 gauss maximum MOTOR: 1775 gauss maximum

"HOPRA Approved" Compression Molded Polymer Magnets for Polymer Modified Car

Magnets are listed by magnet manufacturer and may be used in all chassis adhering to class rules

Manufacturer	Part #	Description
BSRT	#272	G-Force Traction
	#263	G-Force Motor
	#271	G-Force Traction
	#278	G-Force Traction
	#277	G-Force H-D Motor
	#290	G-Force Motor
	#284	G-Force Traction
	#276	G-Force H-D Motor
	#292	G-Force Motor
	#286	G-Force Traction
Slottech	#64	T3 Motor
	#81	Motor
	#81C	Motor
	#86	Traction
	#86C	Traction
	#62-1	PolyMax Motor
	#62-2	PolyMax Motor LW
	#67	PolyMax Traction
	#68	MegaFlux Traction

*Continued next page



Magnets are listed by magnet manufacturer and may be used in all chassis adhering to class rules

Manufacturer	Part #	Description
Slottech	#61 #66	PolyMax Motor PolyMax Traction
Wizzard	WS60 WS61 MHP60 MHP61 MHP67 FS70 ES71	Stock Storm Motor Stock Storm Traction High Level Storm Motor High Level Storm Traction Storm Traction Polymer Motor Polymer Traction
Viper Scale Racing	12000 12002 12001 Traction Motor 12006 12008 High Downforce Motor 12007 High Torque Motor 22738 Maxi Traction 12010 V1 Black Diamond Tipped Motor 11056 V3 Traction V3 Step Traction	Hyper-Force Motor Hyper-Force HD Motor Hyper-Force Traction
RPMs	RPMsHF-LDM10 RPMsHF-L10-T	Hyper-Force Motor Hyper-Force HD Motor Hyper-Force Traction

- All magnets shall remain in their stock location.
- The use of glue shall not be allowed on the magnets or to retain the magnets to the chassis. Other non-magnetic materials may be employed to restrict the movement of the magnets. Any chassis clip used to hold the car together must not touch the magnets or affect the magnetic field.
- Any type of armature shall be legal.
- Electrical systems shall be stock or stock replacement. Adjustable brush tension is allowed. Physically attaching brushes to springs (using glue or other substance) or spring arm is allowed. Plated parts are allowed. Shunts are allowed.
- There are no restrictions on the armature bushings/ball bearings (may be glued in), guide pin, wheels, tires, gears and axles.



11. NEO MODIFIED CAR CLASS RULES

Legal chassis are: BSR T T2/G3/G3R/G3RS/G3RSB, Mattei/Tyco 440 X2, Micro Speedworks T+, Slottech Panther/Panther 02/Thundercat T1 and T1X, Tomy AFX Super G+, Wizzard-Patrol P2/P3/Scorpion/Storm/Storm CH22/Fusion, Viper V1/V3, RPMs Ghost Cat

- The chassis must be stock, readily available, "HOPRA Approved" and cannot be machined, sanded or cut except to provide for the following:

- Add, remove or re-add body mounts.
 - Mount any guide pin holder - guide pin shall remain in any one of the stock positions.
 - Add motor bushings.
 - Drill or cut holes for adjustable brush tension.
 - The bottom surface of the chassis and bulkheads may be sanded flat. However, the bottom bulkhead tabs shall remain naturally connected to the end bells.
 - The pickup retaining tabs on the chassis may be reinforced and/or replaced in their stock position.
 - Add rear axle retainer.
 - Add front axle retainer.
 - Add bulkhead/magnet clip retaining screws.
 - Add any stock or stock replacement front bumper.
- All magnets shall remain in their stock location.
 - Rear axle bushings are allowed for the approved chassis only. Ball bearings are not allowed in the rear axle.
 - The use of glue shall not be allowed on the magnets or to retain the magnets to the chassis. Other non-magnetic materials may be employed to restrict the movement of the magnets. Any clip used to hold the car together must be non-magnetic only.
 - Any type of armature shall be legal.
 - Electrical systems shall be stock or stock replacement parts. Adjustable brush tension is allowed. Physically attaching brushes to springs (using glue or other substance) or spring arm is allowed. Plated parts are allowed. Shunts are allowed.
 - There are no restrictions on the armature bushings/ball bearings (may be glued in), guide pin, wheels, tires, gears, and axles.
 - There are no restrictions on the type of magnet material, cobalt, rare earth or polymer are allowed.

