

INTERNATIONAL FEDERATION OF MODEL AUTO RACING



# **BRUSHLESS MOTOR HOMOLOGATION PROCEDURE**



Website: <http://www.ifmar.org>

**IFMAR Electric Chairman**

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Piscataway, New Jersey 2008

Dear Madame/Sir

The 2008 IFMAR World Championships for the Electric Track classes (1/12<sup>th</sup> & 1/10<sup>th</sup> ISTC) will be held in Bangkok, Thailand from November 08 - 16, 2008. Your company has to submit motors, batteries and/or bodies for approval previous to the IFMAR World Championships. Enclosed are details of how to obtain approval for your products for the 2008 events.

If the motors are already approved, you have no need to seek new approval; any products previously approved do not need to be resubmitted. IFMAR approves the construction only, which is the can, end bell, armature.. If you have no new motors for approval for the 2008 events, please destroy these Homologation Forms as they cannot be used for future IFMAR Electric W.C. events. If you have products not approved (or products which are significantly changed after the last approval), and you wish them to be approved for official use at the 2008 Electric Track W.C. and future IFMAR W.C. events, **you must send them for approval according to the dates mentioned in the various forms attached to this.**

By this date the samples of the products and the completed homologation form must be in my hands. ANY PRODUCT OR FORMS RECEIVED AFTER THE CLOSING DATE CANNOT BE APPROVED FOR THE 2008 ELECTRIC TRACK WORLD CHAMPIONSHIPS. Products not approved cannot be used by any competitor at the 2008 Track Electric IFMAR World Championships.

Evidence of the availability of the product should be sent to the IFMAR Treasurer

The approval procedure is very easy. If you have any questions please contact me direct at the email address above and I will assist you. The IFMAR Electric Section will look forward to receiving your products for approval BEFORE the deadline noted above.

Sincerely  
Ernest N. Provetti  
Electric Chairman, IFMAR

**P.S.** Please ensure that, if or when sending samples for homologation purposes, you state on the Customs Declaration Form "Samples Only – No Commercial Value". Please also make sure that the package you send is free of costs for the receiver. It would also be appreciated if you also notify me by email: [electric.chairman@ifmar.org](mailto:electric.chairman@ifmar.org) that your products have been posted.



## BRUSHLESS MOTOR HOMOLOGATION PROCEDURE

### PLEASE READ THIS FIRST

The International Federation of Model Auto Racing (IFMAR) allows only approved motors and batteries to be used in its sanctioned World Championship meetings. This approval is to ensure that all competitors have equal access to the latest motors and batteries, thus ensuring wherever possible, fair racing to decide the World Champion. IFMAR makes no representation as to the quality or efficacy of the products approved. If parts of an approved motor are changed, the motor must be sent to IFMAR for re-approval.

Any manufacturer, distributor, agent or retailer may submit products for approval. Providing the products meet the specifications and requirements of the IFMAR rules in force at the time of approval, and are submitted by the closing date and meet the availability requirements of IFMAR rules, IFMAR will approve the product.

Please follow this procedure:

Complete the IFMAR Brushless Motor Homologation Form.

Prepare (1) copy of the commercial documents required (Invoices, Advice notes, etc) which show receipt of 2,000 parts and sale of 300 motors in accordance with the IFMAR Rules. **Send these documents to the address mention in the homologation forms**

Send three (3) teardown motors with the Motor Homologation Form to the address mention in the homologation forms

Send three (3) motors with a copy of the Motor Homologation Form to the IFMAR approved laboratory for checking. The laboratory is:

Bob Ingersoll  
RHI Services/ Robert Ingersoll  
2921 Harlee Drive  
Farmers Branch, TX 75234-5007  
[roarrhi@tx.rr.com](mailto:roarrhi@tx.rr.com)

### PLEASE NOTE

**This page of the brushed motor homologation form together with Copies of invoices, receiving notes, etc. for availability check should be sent separately ONLY to:**

**IFMAR Treasurer  
c/o Jean-Luc RETORNAZ  
PO Box 25, 2019 Route de Berre  
F-13122 VENTABREN  
France**

If you intend to homologate more than one product please copy this page and use only one form per submitted product.

### Brushless Motor Specification Checklist

<b>Brand / Trade name of Motor:</b>	
<b>Availability</b>	<b>Evidence (Invoices, etc.)</b>
300 sent to Hobby Stores, Distributors, OEM's	
2000 motors available at your Company	

## **EXTRACT FROM THE IFMAR ELECTRIC TRACK RULES**

### **4.3 MOTORS**

Only IFMAR approved motors may be used. Approved motors must meet the following specifications and be commercially available four (4) months prior to the World Championship. Availability requirements must be met at the time of submittal. Submittal deadline to be four (4) months prior to that year's event to be placed on that year's list.

4.3.1 Manufacturers must submit motors direct to a testing laboratory, the name and address of which will be supplied, on request, by the IFMAR Electric Section Chairman. Manufacturers will be responsible to pay all laboratory fees for testing. Upon receipt of laboratory confirmation from the manufacturer to the IFMAR Electric Section Chairman that the product meets all specifications and the Chairman is satisfied that all IFMAR availability requirements have been met the product will be included on the approved products list for use at WC events.

4.3.2 An approved products list of motors approved for use in the World Championships must be posted on the IFMAR website and the organizer's website (if available) four (4) months prior to the event and the list shall be included in the race acknowledgement package sent to each competitor no later than two (2) months prior to the event.

#### **BRUSHLESS MOTORS:**

General definition of a Brushless Motor:

- a) Sensored or sensorless motors are allowed.
- b) The motor has to be rebuildable. Ball bearings are allowed.
- c) If the motor is sensored:
  - It must use a six position JST ZH connector model number ZHR-6 or equivalent connector with 6 JST part number SZH-002T-P0.5 26-28 awg contacts or equivalent.

Wire sequence must be as follows:

- Pin #1 - Black wire ground potential
- Pin #2 - orange wire phase C
- Pin #3 - white wire phase B
- Pin #4 - green wire phase A
- Pin #5 - blue wire temp control, 10 k Thermistor referenced to ground potential
- Pin #6 - red wire + 5.0 volts d.c. +/- 10%.

Compatible speed control must use the 6 position JST header part number X-6B-ZR-SMX-TF (where the X denotes the style of the header), or equivalent.

- The power connector has to be clearly marked A, B, C.

A for phase A  
B for phase B  
C for phase C

- d) `05` size specifications

Can:

Overall maximum diameter is 36.02mm measured at whatever point yields the maximum dimension, excluding solder tabs or lead wires. Overall minimum diameter is 34.00mm measured at whatever point yields the minimum dimension, excluding solder tabs or lead wires. Maximum length is 53.00mm measured from the mounting face of the motor to the furthest most point of the end bell, not including solder tabs, lead wires or original manufacturer's logo or name. Minimum length is 50.00mm measured from the mounting face of the motor to the furthest most point of the end bell, not including solder tabs, lead wires or original manufacturer's logo or name. Motor mounting holes must be on 1.00- inch (25.40mm) centres.

Stack/Stator:

**The Stack or Backiron must be continuous. The laminations have to be one after the other without anything in between. Stack/Backiron minimum length 19.30mm, maximum 21.00mm. The thickness of the Stack/Backiron laminations is 0.35+/-0.05 mm. All laminations must be of the same material. Inside diameter of Stack or Windings equals the central space between the laminations or assembly of windings and must accept 'plug' gauges of 12.5 mm minimum, 16.0 mm maximum. These dimensions to be measured with the centre of the 'plug' gauge in-line with the centre of the motor Can. (i.e. Concentric to can).**

Winding:

**Delta and Y wound stators are permitted.** Only circular (round) pure copper wire permitted. No turn limit.

Rotor:

Shaft diameter must be 0.125 inches (3.175mm). Only one piece, two pole ~~banded~~ Neodymium or Ferrite magnetic rotors are permitted. Magnet minimum length 23.00mm, maximum 27.00mm. Magnet minimum diameter 12.00mm, maximum 15.50mm.

- e) All motors must have the original manufacturer's logo or name moulded into the end bell.
- f) A minimum of two thousand (2000) brushless motors must be available at the time of approval. A minimum of three hundred (300) brushless motors must have been sold to at least three (3) distributors or hobby shops or OEM's at the time of submittal. The manufacturer has to provide an address of a hobby shop or the like, that any driver who wishes to obtain these motors at the time of the approval can do so. No hybrid (mixing of parts from approved brushless motors) allowed.



# ELECTRIC SECTION

## BRUSCHLESS MOTOR HOMOLOGATION FORM

Brushless Motor Specification Checklist					
Fill in the grey shaded boxes below with the details of the motor being submitted for approval			For IFMAR use only		
Requirement	Nominal Size	Tolerance +/- Acc	Acc	Rej	n/a
Can Length					
Can Diameter					
Shaft Diameter					
Stack Length					
Stack Inside Diameter					
# Slots					
Rotor Length					
Rotor Diameter					
Trade Name of Motor					

Please fill in the details above for one type of motor. Use another form for more types of motors (photocopies accepted). Send this form with 3 (three) samples (teardown or fully built) of the motor to:

**IFMAR Electric Chairman**  
**Mr. Ernest N. Provetti**  
**47 Colonial Drive**  
**Piscataway, New Jersey 08854**  
**USA**

**NOTE: CLOSING DATE FOR APPROVAL TO BE USED AT THE 2008 ELECTRIC TRACK WORLD CHAMPIONSHIPS IS JULY 8<sup>th</sup>, 2008**

**Company Name:** .....

**Address:** .....

.....

**Country:** .....

I agree that the above information is correct to the best of my knowledge. I accept that the samples submitted will be used to check motors at the IFMAR World Championships.

Signed:..... Name: ..... Position: .....

<p><b>For IFMAR use only:</b></p> <p>Approval by IFMAR Laboratory - RHI Services. RHI Services date received:.....</p> <p>The motors submitted to RHI Services Laboratories meet the current applicable IFMAR specifications.</p> <p>Authorized Signatory and Date: .....</p>
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