

#### GENERAL

**Membership eligibility:** Any person is eligible for membership. Annual Membership shall be in effect from Jan 1 to Dec. 31.

**Fees:** Driver memberships are \$25.00 annually and truck registration is \$25.00 annually. Memberships paid after the close of the February meeting will be \$35. New members (someone who did not race the previous year) will pay \$25.00

If running an FRRC event the truck must have paid the FRRC competition fee. Excludes all other tracks besides WIR.

**Competition:** All competitors must be members of Wisconsin Sport Truck Club in good standing. Club rules will apply at all tracks. Must have a WST membership to compete in practice, qualifying, or the race at any track.

**Technical Committee:** Will be voted on annually. The tech committee shall be made up of 3 regular people and 1 alternate. In the event there are replacement members of the committee are needed the officers will appoint replacements. There will be 1 "lead tech officer" who will be chosen from the committee who will have a vote on truck rule violations.

**Hold Harmless Agreement:** A hold harmless agreement must be signed annually by every person competing or pit crew member for any Wisconsin Sport Truck Racing Event. must be turned in prior to your truck seeing the track. Your truck does not see the track until turned in to an official.

**Age Rule:** Minimum age of 14 years old, with racing experience and/or officer's discretion. If track rule has older age, track rule will supersede

All racers under the age of 18 must have a waiver signed and notarized and kept in the pit gate as well as a hold harmless agreement signed and notarized.

If 13 years old and turning 14 in the calendar year talk to a track officer for approval.

Minors: Minimum of one parent / guardian must be present at pre-race drivers meeting.

**Voting and Memberships:** Cut-off date to purchase memberships is PRIOR to the Wisconsin Sport Truck banquet. Memberships purchased before the banquet can take part in voting. Voting regarding truck rules is 1 member per registered truck can vote.

**Protests:** The technical committee has the right to check any truck at any time without protests. All monies and points for the truck being checked will be withheld until the club officers make the decision. If the truck is legal, all monies and points will be award as normal.

**Written protests:** The protest must be written and fifty dollars (\$50.00) must accompany the protest. If the protester is proven wrong, the protested truck owner receives the \$50.00. If the protester is right, the \$50.00 will be returned. The illegal truck will be fined \$25.00 and possible additional penalties. If the owner repeats the same infraction a second time, the fine shall be



\$50.00. If there is an infraction of the same nature a third time, the penalty shall be decided by the board of directors. All fines will be paid to the club treasury.

General protest: the protest must be in writing when delivered to the club president. Only drivers may make protest in their event. All questions, concerns, or comments must be addressed at the track with the Officer

#### Technical decisions:

All technical decisions may only be protested to the Officers. Race tech equipment is not subject to any protest. Additional specifications may be added at a later date, and all drivers are expected to keep abreast of changes in all rules. Officials may alter, delete, vary, or change any rule at their discretion.

Technical inspection shall be at the option of the rules committee at all sanctioned Wisconsin Sport Truck events. Inspection shall take place from time-to-time. Trucks must not return to trailers when called for inspection. All trucks notified for inspection will report to tech area immediately after race is completed. Any truck not reporting will be considered illegal and will be dealt with accordingly.

Safety inspection shall be performed at trucks first appearance at the track, and after severe crashes the vehicle must be inspected. The club officers reserve the right of judgment to re-inspect any truck at any time. Wear factors and maintenance will also be considered as points for occasional inspection.

Race rules, technical directors, and safety inspector's decisions cannot be appealed.

Anytime an inspector cannot determine a limit to be legal by external measurements; a disassembly of parts in question will be required.

Any unit not tearing down when requested will lose points and money for the event. That Truck and driver will not be able to participate in any Wisconsin Sport Truck Club events for the remainder of the season.

The use of alcoholic beverages or any illegal substance not prescribed by a Doctor is prohibited by any driver or pit crewmember during or before the days racing event.

Physical violence, verbal abuse, vandalism or any unlawful action of any other person within the boundaries of the race track facility will result in immediate suspension, a fine, and possible prosecution through local law enforcement authorities.

Rule Infractions: All rule infractions will be labeled as major or minor infractions. See below for descriptions

Minor Infraction - First offense results in last place points and must fix/legalize truck before the next event or the truck will not be able to compete. Second offense of the same rule anytime within a season will result in loss of all points from current event.



Infraction penalty.

Major Infraction - Loss of all points from current event and must fix/legalize truck before the next event or the truck will not be able to compete.

All other infractions will be given one week to fix unless deemed unsafe to compete by the tech committee and the officers. If truck has not fixed infraction after one week, that truck will not compete until infraction is made legal.

Away and Home series infractions cannot have an impact on either series unless infraction is deemed a safety issue by the tech committee and officers.

**Running trucks in pits**: All trucks must be blocked up when running in the pits if no driver in Truck.

**Radios:** The Raceceiver 1600 Elite one way radio is mandatory at all tracks. It must be on the track frequency. Only one radio is allowed per truck.

Use of two-way radio or if proven to be on a different frequency **for an advantage** will result in a Major Infraction. All other radio infractions will result in a warning or disciplinary actions by the flagman.

#### SAFETY

# All Safety Infractions will be treated as a warning and will be given one week to fix or truck will not compete. TRUCK CANNOT COMPETE IF DEEMED UNSAFE BY TECH COMMITTEE AND OFFICERS

**Truck Safety Inspection**: It is the responsibility of the truck owner/driver to have their truck inspected. Trucks must have safety inspection stickers displayed on the chassis any time the truck in on the track. Inspection sticker to be placed on the left side "A" pillar of the roll cage.

**Safety Inspection Late Tech Fee:** If a truck is not teched before the first race they will not be allowed on the track until teched. Also, a truck that is teched late will have a \$25 fine removed from their year-end points check. A truck is deemed late if driver/truck combination competed previous season and did not get teched on tech day NO exceptions. Teching on race nights will be held after qualifying unless previous arrangements are made with the Technical Committee. New members and or new trucks will not be assessed a penalty if they start racing after the season started.

**Driver Safety Equipment:** A helmet that meets Snell foundation SA 2015 specifications is mandatory. The outside structure of the helmet shell must provide full ear protection. Approved flame retardant race suits are mandatory. The club strongly advises the use of one piece, flame-retardant underwear, facemasks, socks, and shoes. (Nomex or equivalent) all of these items are for your own safety. Flame-retardant gloves must be worn- (no mechanics gloves).

Neck braces/ hans device are required at all tracks. All equipment worn by driver must be available for tech inspection.



**Restraints:** A quick release lap belt and double shoulder belt no less than 3 inches wide is mandatory. A 2-inch submarine belt is also mandatory. Seat belt and shoulder harness must be installed according to manufacturer's recommendations. The belts and harness must be attached to the roll bar cage at approximately shoulder height with Grade 5 or better hardware, no less than 3/8 inch in diameter.

Arm restraints are optional. Frayed, cut or burned safety belts will not be permitted. Belt dates are at track discretion.

**Steering:** All steering bolt nuts, and axle nuts, must be safety wired or cotter-keyed. Spindle rod eye joints (upper & lower) do not need to be pinned.

**Clutch Guard:** a 180-degree clutch guard to fully protect the driver will be 0.060 steel minimum without holes 0.125 aluminum 1/8".

**Switches:** two electrical kill switches must be mounted. One will be on the steering wheel or within the driver's reach on the right hand side of the driver's compartment. The other shall be activated by a *tether cord* to be mounted vertically along with right rear vertical roll cage member with a minimum of 8 inches of free cord.

**Driver:** shall be able to see 90 degrees to each side.

#### CHASSIS

**Frame:** only solid frames with axles rigidly mounted will be allowed. Frames rails need not be continuous for the full length of the vehicle.

Frames that are joined by bolting tube and socket joints or pinned joints must not exhibit any uncharacteristic flexing of the joint. All joints that use pivot bolts or pins shall not exhibit any signs of wear, loose construction or other tolerance that would allow excess movement.

Rod ends will only be allowed in mounting of steering components, front or rear weight jacks, linkages to control brake calipers, steering shaft mounts, steering gear mounts, and throttle and brake linkages.

*All frames:* must be of tubular construction – 1-inch square or round steel or chromoly minimum. The following components will not be allowed in frame construction: shock absorbers, rubber bushings, rubber axle or roll cage mounts, rubber flex absorption devices, leaf springs, coil springs or torsion springs. Major Infraction

It is strongly recommended that the base frame be of .095 or thicker tubing.

**Chassis frame specifications:** Wheel base length: 75" + or - 1" Wheel base width: 50" min. To 53.75" max. Tires must be kept inside of body panels.

Measurement will be taken from 2" off the ground on the outside sidewall in line with the spindle. Measurement will be taken with specified tool. Minor Infraction



#### Truck minimum weight:

All trucks and drivers must have a minimum weight of 825 lbs. Minor Infraction

**Roll cage:** mandatory minimum material for the roll cage shall be 0.095-inch wall thickness by 1-inch diameter steel. The roll cage structure is defined as the four corner members. All overhead members and the shoulder level horizontal members on all four sides of the structure protecting the driver's torso. A 36-inch head restraint is required above the seat back as high as the top of the driver's head. Driver's head cannot stick above the roll cage. *It is strongly recommended that there be at least 2 inches between the top of the drivers head and the bottom of the top roll cage member.* Additional members, braces, and gussets below the shoulder level may be of tubing with less than 0.095 wall thickness.

Shoulder height is defined, as a height no lower than the driver's armpits while in normal driving positions. It is strongly recommended that the roll cage members below shoulder height shall be no further apart than 10 inches whether vertical or horizontal, but is required on the Driver side between the 2 driver side vertical corner posts.

Adequate lower body protection must be maintained and will be at the inspector's discretion.

Floors: all trucks must have a solid full floor of at least 0.040 aluminum from feet to back of seat.

**Track removal system:** all trucks must be equipped with hook on roll cage to remove from track. Hook must be located such that when used truck will pick up evenly and balanced.

Mirrors: Each truck must have a minimum of 1, 3" round mirror, on the driver side A-Pillar.

**Bumpers:** shall be 4" wide. Must be purchased from the club. Bumpers must remain intact. No holes to be cut in bumper except for fastening body. Exhaust will not be allowed to extend through bumper. Bottom of metal bumper front and rear shall be 7.5 inches from the bottom of the bumper to the ground + or -1".

**Overall length:** steel bumper to steel bumper: Must be 126" (0" to -2") Bumper to bumper

**Bugar Bars:** supports between the front and rear axles are a must. The supports shall be 9 -1/2" from the floor to the bottom of the bracket/support + or -1". All corners must be radiuses.

**Ballast weight:** Total ballast weight not to exceed 30 lbs per single ballast. Multiple pieces are acceptable, and there is no maximum total ballast weight. Ballast can be broken down into smaller pieces. Each unit of ballast needs to be secured by 3/8" grade 5 bolts or larger. Ballast must be painted white with the truck number stamped on it.

**Brakes:** rear brakes must be mounted directly on the drive axle and must be capable of sliding wheels on a clean, dry surface.

**Throttle:** trucks are to be equipped with foot-operated throttles. Must have a spring, which will close the throttle when released.



**Seat:** a metal, aluminum, or composite seat is mandatory. No plastic or fiberglass seats are to be used. Seats may be rubber mounted if done in a workman-like fashion. IT IS STRONGLY RECOMMENDED THAT THE SEAT HAVE A HEAD SUPPORT ON THE LEFT SIDE OF THE SEAT.

**Transponder:** The transponder will be mounted no less than 48 inches from the peak of the front bumper to the center of the transponder.

Minor Infraction unless there is clear evidence of damage to the bumper caused by an incident on the track.

#### BODY

**Windshields:** all trucks must have lexan windshields. Must be purchased from the club. No vents or openings are allowed in windshields.

Bodies: all bodies must be purchased from the club

**Air ducts:** There will be no modification allowed to the front, tail, and/or side panels. Air duct will be allowed in the nose cone, to resemble the headlight assembly or grille and one air duct in each side panel. Also 2, 3" diameter screened and painted holes will be allowed in each side of the tail to resemble truck tail lights. Please use discretion in placing air ducts in front nose cone. Ducts will be official racing air ducts. There will be no lips of any kind allowed on air ducts or side panels. All air ducts need to be screened and/or painted to match truck. No external flex tube is to be used for vent on outside of truck.

Rear spoiler rule: 5" maximum height by 48" maximum width.

Side panels: Must be purchased from club

**Cab:** shall be mounted 43" from the rear of the cab to the back of the alum side body panel + or - 2".

**Box area:** shall be covered with a material that appears to be solid from the stands. Screen, fine mesh, alum, Vinyl, etc.Nothing is to protrude out from the covered material minus airfilters. no aluminum or pvc. enforced from back of the cab to the spoiler.

All trucks must be neatly painted and professionally lettered.

Any decals or logos deemed in bad taste by the officers are prohibited.

**Numbers**: must be placed in the following locations and be of 14" by 12" size minimum: side door area.

All trucks must have 3" to 4" numbers on the top corner of the windshield and on the bottom of the tail piece. These are line up numbers and should be placed on the passenger side of truck.



**Numbers:** All numbers must be unique. No duplicates. Number must be approved at registration time. Don't decal truck before number is approved.

Parts: Prices are subject to change at any time based on supplier pricing.The parts list is on the websiteContact Dan Plutz for club parts. (920) 585-4038

#### ENGINE

#### Allowed Engines:

Fan cooled Yamaha Phazer 2-stroke 485cc engines, with a maximum overbore of .060, and a maximum cc of up to 508cc.All engines must start as a Yamaha Phazer 485cc OEM motor. All must have factory OEM blocks, OEM ignition, OEM cylinders, OEM heads, and OEM stroke of that engine. Motors can use any production piston as long as it has a part number available to the general public.

Major Infraction

Ignition system must be OEM for the specific motor that it is on. Major Infraction

Claiming a cdi box: if you choose to claim a cdi box from a competitor you must finish in the top 5 in the feature and you must go directly to tech following the race, where your truck will be teched. If you go to your trailer and then to tech you failed and the claim is null. If your truck passes tech, \$30 and your cdi box will be swapped for the competitors cdi box. If the claimed truck denies being claimed they will forfeit their points for that nights feature.

*Note:* all engines are open to internal modification provided that all components start as production parts. No performance enhancing external modifications are allowed. The only external modifications allowed are for repair. No external welding permitted to the outside of cylinders or head. *Example: hard ware replacements, welding to repair original damaged parts.* 

Any type engine may be restricted if its dominance is not conducive to competitive racing. Engine dominance is up to the officer's discretion and may be enforced on a race by race basis.

Rubber Mounts: Engines may be rubber mounted and at the discretion of tech. committee.

**Carburetors:** All Carburetors shall be 34mm stock Mikuni flat or round slides. Mikuni Carbs can be bored 1/2mm (0.020) over. 1 Carb per cylinder. Major Infraction

No modifications to stock body carb. Except overbore body. A coin type gauge will check size of carb. The coin cannot pass through the backside (reed/ outlet) of the carburetor at any rotatable position into the slide area. Major Infraction



**Exhaust:** multiple cylinder exhaust pipes must converge into a single pipe within 12" of the exhaust port measured on the centerline. Only single tuning chambers. Custom pipes must provide for inspection and verification. Major Infraction

All components are to be within the periphery of the truck. Any excessive noise will be at the discretion of the board and the tech committee.

If illegal – one week to fix and if not fixed after one week, truck will not compete.

Exhaust exit must be no more than 20 degrees off perpendicular from the ground, not pointing to the right of the truck and to be no more than 6 inches away from the ground.

Exhaust pipes must have a non-altered manufactures built in silencing system. OR

Other exhaust silencer or muffler systems must be passed at technical inspection and approved by the technical committee and board.

If illegal – one week to fix and if not fixed after one week, truck will not compete.

#### TIRES and WHEELS

**Diamond Racing Wheel:** Description of the Diamond Wheel: 10x7.5 F-3.75 SCCC. Part number for new Diamond Racing rim is # 10750-03-02-375-1-00 must be used on ALL wheels. No alterations of wheels are allowed. Racetech Chassis sales part number – 4456500301. Major Infraction

**Tires allowed:** LT 45 Hoosier #18810 which will be supplied by Racetech Chassis. No mechanical or chemical altering may be done to any tire and limited to the following; a) Wire Brush b) File

c) Puddy knife

At no time may debris be removed by spinning the tire powered by the truck. Major Infraction

# Tires and rims must be purchased through RaceTech Chassis in Neenah WI. (920)-277-6000

**Axles:** rear axles shall be 1 1/4 inch diameter minimum and of solid material from shoulder to shoulder. Front axles shall be mounted to the frame in at least two places. No single pivot mount axles will be allowed. Maior Infraction

**Hubs:** retaining nut must be minimum 5/8", wired (cotter pin). Aluminum rear hubs must be 1/2" wall thickness minimum. No hubs may be held on by a snap ring. Hubs must be rigidly mounted to the rear axel without the ability to free wheel.

Non rigidly mounted hubs is a Major Infraction unless signs of wear is a cause at the discretion of the tech committee. All other hub infractions will have one week to fix or will not compete



#### FUEL

**Fuels:** Pump gas only. The average dielectric constant for the hydrocarbons, which compromise gasoline, is 2.025, which will be our baseline for fuel testing. If a d-t15 fuel tester is used, the baseline will be minus 55. Maior Infraction

**Fuel cells or tanks:** three-gallon limit. All tanks must be securely affixed to the truck and have a screw-on cap. No pressurized fuel systems are allowed. All fuel tanks must be mounted so that they are protected from other vehicles and may not be located in the driver's compartment. EVERY TRUCK must have some type of ROLL OVER VENT VALVE, and at the discretion of the tech. committee. Suggested part #'s (www.jegs.com) 547-834-006-11, 547-834-008-11, 547-834-108-06. Any fuel cell or fuel tank must be checked and approved by safety committee.

**Fuel tanks:** must be mounted in the box area of the truck. Fuel cells mounted in the cab area will not be accepted.Fuel tanks must be securely fastened with metal straps and/or bolted to the frame. Fuel tank mounting is up to the tech committee and officer discretion. IT IS STRONGLY RECOMMENDED THAT YOU DO NOT USE THE RED PLASTIC GAS JUGS FROM HARDWARE STORES AS FUEL TANKS.

#### TRACK PROCEDURES

**Possum rule:** this will be enforced by the discretion of the race officials. If a race official deems a truck, which spun by them selves, waited intentionally for a caution to fly before moving to keep the race going, will be scored one lap down

**Driver:** shall be able to see 90 degrees to each side. All new and substitute drivers must start in rear of race first night.

#### Imprudent driving in the pits:

1st offense – verbal warning2nd offense – written warning.3rd offense - loss of points for the event/unable to compete the next week.

**2 SPIN RULE:** Any time you spin twice (on your own) in one race, you are out of that race. THIS INCLUDES WARM UP LAPS. You will be awarded last place points. The flagman will be responsible for enforcement by issuing a black flag.

#### Trophies:

Trophies will be awarded to banquet attendees as follows:



Top 10 at WIR Top 3 at norway Top 3 for Touring

Drivers must notify the club president of their intention for attending the banquet within a timely manner for trophies to be prepared.

#### Rookie Eligibility Requirements:

To be considered a rookie you must not have raced more than 5 races at WIR and/or FRRC events in prior years. Eligibility is at the discretion of the officers. The only person that can get points is the rookie, NOT the truck.

#### Last Two Weeks of Racing:

Last two weeks of racing of each series, no sub drivers. The Officers can make exceptions.

#### SUB DRIVERS:

Highly recommended that the officers be notified of a sub driver at least 1 hour before the race. Note: Sub drivers must be members to receive points. Officers must weigh all options when approving number changes and sub drivers, including points or anything that may affect the competition.

#### Truck/ number:

The truck/ number combination that races any event in a night must race that truck/ number combination the entire night to keep all the points. If a driver is to change chassis at anytime of the night, they must forfeit points that were earned in earlier events and start the night with 0 points. That driver must start in the back of the next event of the night. For example if the truck were to change between qualifying and the heat race, that truck must start in the back of the heat one (slow heat) as if that truck/ number did not qualify.

#### Regular Driver:

Continue to keep points with the truck for regular drivers.

#### Track Rules:

Track rules supercede Sport Truck Club rules.

**Driver etiquette:** each driver/team owner is responsible for the behavior and actions of crew, who is attached to his/her effort. Any punitive actions required for crew behavior will be levied against the driver/team owner.

#### Invert:

To be eligible for the invert, the qualified truck must have a qualifying time equal or less than 1.0 second plus fast time. For example: if the fast time is 16.000 to be eligible for the invert the truck must qualify 17.000 or better. All trucks that do not not qualify for the invert will start behind the



invert in the order they qualified (fastest to slowest). If qualifying is rained out the 1.0 second rule is null.

#### Line-ups and points:

If there is an odd number of trucks, the odd number goes to the slow heat race.

If the person racing the feature did not qualify the truck, he/she must start behind the previous week's feature winner if the truck qualifies for the inversion, rear of heat that truck qualifies for.

Lineup for feature will be determined by dice roll 8 plus roll (highest place fast qualifier would be 9th) Example:

If dice roll were a 3 the fast time qualifier would start 11th If dice roll were a 6 the fast time qualifier would start 14th If dice roll were a 1 the fast time qualifier would start 9th

In the case that qualifying is rained out:

**WIR:** The qualifying order will be decided by average qualifying time at WIR and a dice roll will be used to set the lineup (qualifying points will not be awarded). If a competitor does not have an average time for the current season, he/she will start behind the inversion and all other trucks that have an average time recorded. If multiple trucks do not have average times recorded, those trucks will be lined up by a random draw. If qualifying is rained out for the first night of competition, average time at WIR from the previous year will be used.

If FRRC Red White and Blue qualifying rained out lineup to be set per FRRC rules

**Away Series:** The qualifying order will be decided by the Away Series points and a dice roll will be used to set the lineup (qualifying points will not be awarded). If a competitor has not accumulated any points, he/she will start behind the inversion and all other trucks that have accumulated points during that current season. If multiple trucks have not accumulated any points, those trucks will be lined up by a random draw. If qualifying is rained out for the first night of Away Series competition, previous years points will be used.

The previous feature winner will line up behind the fast qualifier provided that competitor still qualifies in the feature.

**Race Restart (WIR ONLY):** We will follow the FRRC line up rules. Line ups will be double file. Trucks will be stopped on the back stretch until the track officials determine the lineup. Violators will be black flagged. All violations will be enforced by the FRRC.

**Semi Feature;** We WILL NOT run a semi feature with less than 6 trucks. If less than 6 trucks all trucks will race in the feature.



For a semi feature to be introduced there needs to be 24 trucks. 2 heats, 16 on time, top 4 transfer from a 10 lap semi feature to the feature. \*Must be approved by the track

#### Feature race truck count:

*(WIR)* We will take 14 on time, 2 transfers that have not made it on time from heat #1.

(Away Tracks) We will take 14 on time, 2 transfers that have not made it on time from heat #1.

**Scratches:** If you cannot make the feature you are allowed to scratch 10 minutes before the start of the feature. If you chose to run the semi-feature you will forfeit your qualifying points and start at the back of the semi-feature. If you wish to scratch for the evening you will not lose your qualifying points.

Track Procedure:All trucks must drive onto the half mile from the drag strip together. any truck that does not drive out with the group will start at the tail end of the preceding race. if there is a last minute change to the order of events thus rule is null. WIR only (No exceptions)

#### **CLUB OFFICERS**

Officer terms:	President	2 years
	Vice-president	2 years
	Treasurer	2 years
	Secretary	2 years

Elected officers do not need to be racers

**President:** Tanner Fickel Phone: 920-841-3500

**Treasure**: Dan Plutz Phone: 920-585-4038 Vice President: Bobby Wautier 920-304-6389

Secretary: Beth Craig Phone: 920-419-8177



# Official 2022 Page 13

	Wisconsin	Visconsin Sport Trucks Point System				
Position	Qualifying	Heat 1	Heat 2	Heat 3	Semi	Feature
1st	15	17	20	25	40	60
2nd	13	16	18	23	37	57
3rd	12	15	17	21	34	54
4th	11	14	16	20	32	52
5th	10	13	15	19	30	50
6th	9	12	14	18	28	48
7th	8	11	13	17	26	46
8th	7	10	12	16	24	44
9th	6	9	11	15	22	42
10th	5	8	10	14	20	40
11th	4	7	9	13	19	39
12th	3	6	8	12	18	38
13th	2	5	7	11	17	37
14th	1	4	6	10	16	36
15th	0	3	5	9	15	35
16th	0	2	4	8	14	34
17th	0	1	3	7	13	33
18th	0	0	2	6	12	32
19th	0	0	1	5	11	31
20th	0	0	0	4	10	30
21st					9	29
22nd					8	28
23rd					7	27
24th					6	26
25th					5	25
26th					4	24
27th					3	23
28th					2	22
29th					1	21
30th					0	20
If there are only 2 heats, heats 2 & 3 are used						