Report on Tyre Test Day at Winton 26 August 2016

Background

The B.O.M. have received constant complaints about the cost of tyres and starting late last year complaints also came about as the current tyre appears to be less durable (some competitors' have claimed that the compound appears different - this has not been confirmed). In the last six months the complaints about the current tyre durability have increased. Whilst some competitors in NSW and Victoria have stated they are using up to 4 sets of the current tyre in a season, a straw poll suggests that there more common scenario is two sets a season. There is evidence that the costs of tyres are having an adverse effect on competitor numbers in some states and is a major concern for new competitors looking to get into vees.

In response, the B.O.M. insisted that a tyres be looked at – overruling the NTC who wished to extend the current contract for one more year without review.

In addition, on the back of other formula vee categories around the world having changed from bias ply tyres to radials (e.g. Ireland) and with South Africa running an R spec tyre and Brazil & New Zealand on road radials, the B.O.M. decided to investigate radial tyres to see if they were suitable for consideration. Due to extensive testing by Formula Ford Australia who changed from Avon to Yokohama R spec tyres, Yokohama were approached and made available a set of tyres for so initial work could be undertaken. These tyres were run on the Sabre 02 and Jacer (2005) chassis at Mallala and Sandown. The driver feedback and data from this work suggested that radial tyres could be made to work on formula vee chassis.

In selecting a tyre for the next two years and beyond, Formula Vee as a National Motorsport category needs to think about what we stand for. We talk about a cost competitive form of motorsport where it's all about the driver. Our CAMS manual states "*Formula Vee has been adopted by CAMS as its entry-level open-wheel circuit racing formula.*" And in selecting a tyre we need to balance both the National Championship level driver / team's requirements against the low budget, entry level competitor who has just joined our category, thinking about joining our category and probably most important, the competitors who are struggling to keep competing. We don't necessarily need the fastest tyre option but we need to find the best tyre option that provides sufficient performance to allow an active National competition to continue while also providing a tyre that is balanced in its performance in all weather conditions, maintains its performance levels throughout its life without significant drop off in performance and is proceed at a point that suits an entry-level racing formula.

The tyre we ultimately select needs to be one that suits all levels of our competitors from the guy at the back doing his best, up to the pointy end who are looking at becoming the Formula Vee National Champion and beyond.

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Tyre test

The B.O.M. called for a tyre test after consultation with CAMS and invited Hoosier, Yokohama, Dunlop, GiTi and Khumo to submit commercial offers and to provide tyres for testing.

Of those invited, Dunlop did not respond to the invitation and Khumo were unable to provide neither the commercial offer nor tyres for testing.

Testing took place at Winton Raceway on 26/08/2016 and was supported by representatives from the three tyre suppliers who have offered tyre for testing. Drivers and chassis invited were as extensive as possible to cover as many variables in driver experience and chassis as was possible.

Testing was conducted by:

- Brian Pedersen: 1976 Stag 1200
- Adam Newton: Jacer 2011
- Jackson Freer: Jacer 2005
- Daniel Reynolds: Sabre 02
- Kieran Glover: Checkmate

Davis Cutts declined to participate and Dylan Thomas unfortunately suffered chassis damage a week before the test and withdrew.

Weather was sunny in the morning but cloud cover appeared at 11:45 so the rest of the day was partly overcast.

Track temperature was around 13 deg. The track has been resurfaced and is anecdotally quicker than previously, however BRD were also testing formula fords on the same day and stated that they were about 1 second off where they had been on previous test days.

Test Programme – The tyres marked as AD08R (old) were the set tested at Mallala and Sandown. These tyres had had approx. 140 laps on various vees prior to the test day.

Chassis	Driver	Session #1	Session #2	Session #3	Session #4	Session #5	Session #6	Session #7
Sabre02	Daniel Reynolds	GiTi (medium)	GiTi (medium)	Hoosier	Yokohama AD08R	Yokohama A050M	Yokohama A050M	Yokohama AD08R
Jacer 05	Jackson Freer	Hoosier	Hoosier	Yokohama (AD08R old)	GiTi (medium)	GiTi (medium)	Hoosier	Yokohama A050M
Stag 1975	Brian Pedersen	GiTi (medium)	GiTi (medium)	GiTi (medium)	Yokohama (AD08R old)	Yokohama (AD08R old)		
Jacer 2011	Adam Newton	GiTi (soft)	GiTi (soft)	GiTi (soft)	Hoosier	Yokohama AD08R	Yokohama AD08R	
Checkmate	Kieran Glover	Yokohama AD08R	Yokohama AD08R	Yokohama A050M	Yokohama A050M	Hoosier	GiTi (medium)	GiTi (medium)

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Summary data 1600 cc engine – based on drivers that tested all tyres (due to issues that came up e.g. rims not fitting on one Jacer, flat tyres, data not downloadable etc.) not all recorded data for all sets

Tyre	Jackson Freer	Daniel Reynolds	Kieran Glover	Delta across Drivers
Hoosier	36.0	34.1	34.4	1.9
GiTi (med)	37.9	36.5	36.4	1.5
AO50M	35.5	34.7	34.3	1.2
AD08R	37.8	36.6	37.2	1.2
Quickest tyre	AO50M	Hoosier	AO50M	
Slowest tyre	GiTi (med)	AOD08	AOD08	

Summary of drivers' opinion

All drivers' comments are their own opinion and have been summaries below. Each driver's opinion has been included in full (attached in the PDF's).

Hoosier:

1. Daniel Reynolds - Car is well balanced all round. Tyres did what they needed to.
2. Adam Newton - Confidence in cornering and braking. Vibration under braking
3. Kieran Glover - Very Predictable, easy to drive consistently
4. Jackson Freer - Car felt like a normal vee.

GiTi (soft):

- Adam Newton - Car feels loose in the rear end, If entering the corner at correct speed the rear tries to over steer.

Note: After two full sessions the left hand rear exhibited excessive wear which was already identified as an issue based on previous testing and supplier asked for no further testing.

GiTi (medium):

- Daniel Reynolds - It takes a couple of laps for the tyre to warm up but the fronts never feel up to temp.
- Jackson Freer - I have never driven a car that handles as bad. I was not comfortable on these tyres at all. I have no idea how I fluked a lap nearly as quick as the other tyres.
- Kieran Glover - Front and Rear had even amounts of no grip.
- Brian Pedersen (1200cc) – Lacking grip until 3 or 4 laps even after heavy warm up lap.

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Yokohama 050M:

- Kieran Glover - Still able to induce O/Steer U/Steer (weren't incredibly sticky as I thought they may be). On Exit of corners when encountering mild understeer, nearly took the wheel out of my hands. Initial turn in feels as if it will understeer but seems to hold on and continue to grip.
- Daniel Reynolds - Tyre up to temp for first lap. Car had more rear grip than front causing entry under steer. After raising the rear of the car, balance improved.
- Jackson Freer - They were my favourite, the best the car felt all day. Was considerably more stable than any other tyre through turn 1 and the sweeper.

Yokohama AD80R (Old):

- Jackson Freer - Car felt pretty good. Car felt pretty similar to Hoosiers, maybe a little more grip.
- Brian Pedersen (1200cc) – Tyre felt good from the start. Didn't do too much warm up and they had good grip level. Felt good right through the session.

Yokohama AD08R (fresh set for first session):

- Kieran Glover - Front and Rear Grip both Low. Hard to turn in (Understeering)
- Daniel Reynolds - The tyres came up to temp by the end of the warm up lap. Balance Front and Rear was good, just obviously lacking grip all round. Very noisy tyre consistently squealing.
- Adam Newton - Consistent and predictable but slower. Very happy to run on these next year due to cost / wear. Look great wish they were slightly faster.
- Daniel Reynolds - (second session after softening the front and rear and raising the rear ride height) Again the tyres came up to temp after warm up and good times were consistent all session. Balance was good. Overall the car doesn't feel as nimble as the Hoosier

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The table below shows the wear that we saw during the test day. Unfortunately, the locations of the original Yokohama AD08R measurements have worn off so accurate wear figures are not able to be provided but averages depth shows they have worn less than 0.5mm after over 180 laps of Mallala, Sandown and Winton. We are yet to get the post-race tread depth measurements from the GiTi Medium but the pre-test measurements have been included so the actual thread depths are known.

Yokohama AD08R

	Right Hand Front			Left Hand Front			Left Hand Rear			Right Hand Rear		
	Outer	Middle	Inner	Outer	Middle	Inner	Outer	Middle	Inner	Outer	Middle	Inner
Start	6.94	6.90	6.98	6.57	6.94	6.58	6.70	6.97	6.82	6.90	7.00	6.92
Finish	6.90	6.87	6.84	6.61	6.84	6.59	6.68	6.86	6.73	6.71	6.80	6.64
Difference	0.04	0.03	0.14	-0.04	0.10	-0.01	0.02	0.11	0.09	0.19	0.20	0.28

Yokohama 050M

	Right Hand Front			Left Hand Front			Left Hand Rear			Right Hand Rear		
	Outer	Middle	Inner	Outer	Middle	Inner	Outer	Middle	Inner	Outer	Middle	Inner
Start	5.08	4.55	4.32	4.98	4.40	5.19	5.09	5.21	5.25	5.01	5.05	5.01
Finish	5.02	4.50	4.04	4.79	4.33	5.06	4.93	5.14	5.16	4.78	4.78	4.77
Difference	0.06	0.05	0.28	0.19	0.07	0.13	0.16	0.07	0.09	0.23	0.27	0.24

GiTi (Medium)

	Right Hand Front			Left Hand Front			Left Hand Rear			Right Hand Rear		
	Outer	Middle	Inner	Outer	Middle	Inner	Outer	Middle	Inner	Outer	Middle	Inner
Start	3.87	3.71	3.58	3.81	3.82	3.86	3.95	3.94	4.07	4.15	4.12	3.99
Finish	Not rechecked before tyres were removed from rims.											

This information is distributed for information to the FVAA NTC and BOM. It is understandable that you need to share it with your members so they are informed and can make an informed decision

Please remember that we are still in the tender process so information needs to be held close but may be discussed rather than circulated with your state association.

Indicative costs will be provided to the state B.O.M representatives is a separate document. The relative costs are need to be kept in the strictest of confidence as the FVAA are still in negotiations with the three suppliers and until this is resolved, confidentiality needs to be maintained.

Regards

Mark Mitchell Michael Lloyd