



## KARTSPORT NEW ZEALAND MANUAL

### SECTION M – TECHNICAL PROCEDURES

Issue 2017-1 published and effective 1-1-17

#### **M TECHNICAL PROCEDURES**

##### **M1 TAKING OF SAMPLE TYRE(S) FOR FURTHER TESTING**

**M1.1** KartSport New Zealand may take samples of a competitor's tyre(s) using sample kits and equipment together with the protocols and procedures relevant at the time as provided by the contracted testing laboratory. The sealed samples of tyre(s) taken by KartSport New Zealand will be placed in a sealed receptacle and shipped to the company contracted to administer the testing. KartSport New Zealand can use "Sample A" or "Sample B" or both Samples to determine conformity of the tyre.

**M1.2** The result of KartSport New Zealand's further testing of sample tyre(s) is considered to be a Judge of Fact issue. (Rule C.2.18.h).  
KartSport New Zealand must notify any competitor found to have an illegal tyre(s) within 60 days of the event.

##### **M2 CHECKING A CLUTCH WHICH HAS A FIXED RPM ENGAGEMENT**

###### **M2.1 MAXIMUM REVS PERMITTED BEFORE CLUTCH ENGAGEMENT**

Raket 85	4700 rpm
Vortex Kiwi Mini Rok	4500 rpm
Junior 100cc Yamaha	6000 rpm
Rotax FR125 Max Junior	4000 rpm
Raket 120 Senior/Junior	3000 rpm
100cc Yamaha Light/Heavy	6000 rpm
Senior Rotax Max Light/Heavy	4000 rpm
Rotax DD2	4000 rpm

###### **M2.2 CHECKING THE RPM**

Checking the moving of the kart at the set rpm will take place on either the Out Grid or on the track before time trials and/or races. An oblong strip of metal (10mm high by 75mm deep by 1300mm wide) will be placed on the ground immediately in front of both front wheels. The engine will be started, and the mechanic (if applicable) will step aside. The Technical Officer will pinch the cable of the Revolution-Counter to the spark plug cable to read the number of revolutions. The driver must obey the orders given by the Technical Officer.

## **M2.3 CHECKING THE RPM - PROCEDURE**

The procedure is as follows:-

1. The driver must keep the engine running.
2. The brake pedal must remain in the free position without any pressure.
3. The driver shall accelerate with a smooth and light gradual pressure on the accelerator pedal to allow the Technical Officer to read the rpm at the moment when the front wheels move up and over the strip and the rear wheels travel one revolution.
4. In the case of the clutch not engaging at or before the set rpm, a second check will be done immediately. In the case of the second check being negative the driver will:

**Time Trial:** Not be permitted to start the Time Trial. Exclusion issued for the respective Time Trial session.

**Heats, Repechage, Pre-Final, Final:** Not be permitted to start race. Exclusion issued for the respective race.

The checking is considered a judgement of a **Judge of Fact** and therefore is without appeal.

### **Alternative or Additional procedure:**

The Technical Officer may request the fitting of a device to measure clutch performance during competition. This device must be fixed to the kart by the competitor in accordance with the instructions given by the Technical Officer. The device must not be tampered with. The device must be returned when requested by the Technical Officer. In the case of a clutch being found to be operating outside the specification for the engine/class, the competitor will receive an Exclusion for the respective time trial or race.

The checking is considered a judgement of a **Judge of Fact** and therefore is without appeal.

## **M3 FUEL TESTING PROCEDURE**

### **M3.1 FUEL TESTING USING A DIGITRON DT-15 or DT-47 FUEL TESTER**

Turn the instrument on and allow it to warm up at least 15 minutes before doing any testing. Do not use if 'LO BAT' appears on the screen. Replace batteries. (DT-15 Only)

Insert the sensor into Cyclohexane (C<sub>6</sub>H<sub>12</sub>) base and adjust the instrument to read -55. (The -55 reading is the "zero adjustment" for testing.) (DT-47 Refer to the manufacturer's instructions for manual calibration)

**Note:** When inserting the sensor into the Cyclohexane (C<sub>6</sub>H<sub>12</sub>) and any fuel samples, agitate the sensor to release any trapped air bubbles.

Insert the sensor into the fuel tank ensuring there is sufficient fuel to cover the sensor.

If the reading is zero or a negative number, the fuel is legal. If the reading is above zero (a positive number) the fuel is deemed illegal.

If a fuel sample tests illegal, the following procedure should be used -

- (a) Clean the tester sensor with aerosol brake clean, Allow the sensor to dry for approx 30 sec.
- (b) Check the reading of the instrument in Cyclohexane, if it does not read -55 then recalibrate.
- (c) Recheck fuel sample, checking the temperature of the sample and the Cyclohexane is within 5 deg C.

Additional tests may be used if deemed necessary by the Chief Technical Officer or Chief Steward.

**Note:** It is important that the temperature of the fuel being tested and the temperature of the Cyclohexane (C<sub>6</sub>H<sub>12</sub>) are within 5° C of each other.

The "zero adjustment" point should be checked in the Cyclohexane every 10-30 minutes and readjusted to read -55 as necessary.

### **M3.2 FUEL TESTING USING OTHER METHODS**

KartSport New Zealand may use other test methods to indicate conformity of fuel. Such tests will be indicative only and a sample of fuel will be taken for further testing by the contracted testing laboratory as per rule M3.3.

### **M3.3 TAKING OF FUEL SAMPLES FOR FURTHER TESTING**

KartSport New Zealand may take samples of a competitor's fuel using sample kits and equipment together with the protocols and procedures relevant at the time as provided by the contracted testing laboratory.

The sealed samples of fuel taken by KartSport New Zealand will be placed in a sealed receptacle and shipped to the company contracted to administer the testing. KartSport New Zealand can use "Sample A" or "Sample B" or both Samples to determine conformity of the fuel.

### **M3.4** The result of KartSport New Zealand's further testing of fuel samples is considered to be a **Judge of Fact** issue. (Rule C.2.18.h)

KartSport New Zealand must notify any competitor found to have illegal fuel within 60 days of the event.

## **M4 SOUND LEVEL MEASUREMENTS**

### **M4.1 SOUND LEVELS:** Measurement of sound levels is by one of two methods. Method A (over the track, 1.8m) is the preferred, or Method B (beside the track, 15m).

### **M4.2 METHOD A (over track):** The microphone shall be suspended at a height of 1.8m +/- 0.1m over the driving line and must point towards the track.

### **M4.3 METHOD B (beside track):** The microphone shall be positioned 15m from the accepted driving line at a level 1.2m above the track surface. The point 15m +/- 0.2m from the meter shall be marked on the track surface.

### **M4.4 EQUIPMENT:** A digital meter complying with IEC 6511979, Type 2 or better (IEC - International Electrotechnical Commission) is to be used.

### **M4.5 METER SETTINGS:** The "A" frequency weighting shall be used with the meter in the "fast" response setting.

### **M4.6 DISTURBANCE SETTINGS:**

**Rain:** In the case of a declared wet meeting no measurements may be carried out.

**Wind:** The influence of wind will not be taken into consideration.

**Environment:** Has been taken into account in the method and in the order of measurement.

**Other:** Ambient noises must not exceed 10 dBA

**Disturbances:** less than the noise coming from the vehicle to be measured (eg from vehicles moving on the opposite track side).

**Site:** A site should be chosen where karts are at or near maximum speed.

### **M4.7 SOUND LEVEL LIMITS ARE:**

**Method A** Measured reading must not exceed 106.4dBA.

**Method B** Measured reading must not exceed 88dBA.

Checks may be carried out at any moment of the event. Any infringement found during a random check during an event may lead to the competitor's exclusion.

**M4.7 EXCEPTIONS:**

**Sprint Tracks:**

Twin cylinder or twin engined karts.

Method A - Maximum 109.4dBA,

Method B - Maximum 91dBA.

**MSNZ circuits:**

For twin cylinder or twin engined karts the maximum sound level must not exceed Promoter's and/or MSNZ regulations which are currently 95dBA measured at 30 metres from the centre of the track.

**M4.8 CHECKING** is considered a judgement of a **Judge of Fact** and therefore is without appeal. (Rule C2.18)

**M5 VOLUME OF CYLINDER HEAD**

**M5.1** Oil to be used to be ATF Dextron Auto Transmission fluid/oil.

**M5.2** Test must be performed with a graduated glass burette. Hypodermic syringes may NOT be used.

**M5.3** Test should be done after the engine has cooled. Heads should be marked during the race meeting. Volume will be checked as engine finishes race. No cleaning of the piston or head allowed.

**M5.4 PROCEDURE FOR CHECKING**

- (1) Remove spark plug and insert test plug stamped AKA – tighten the same as you would a spark plug.
- (2) Ensure the engine is level to the satisfaction of the engine representative.
- (3) Place piston at TDC.
- (4) The test plug to be withdrawn between two and two and a quarter full turns to the satisfaction of the engine representative.
- (5) Ensure the measuring oil is at the zero point of the burette to the satisfaction of the engine representative.
- (6) Insert the required volume of measuring oil in one continuous flow without stopping to within 1cc of the required amount. The final amount to then be entered immediately at a slow controlled rate to ensure accuracy.
- (7) Ensure the measuring oil is at the required level in the burette to the satisfaction of the engine representative.
- (8) Ensure the oil has entered into the bottom of the plug.
- (9) Back the piston slightly off TDC ensuring that the oil remains in the plug to the satisfaction of the engine representative.
- (10) Tighten test plug down until it stops (same as at step 1).
- (11) Slowly wind the engine over ensuring the oil is rising in the AKA plug to the satisfaction of the engine representative, continue past TDC. If the oil spills out the top of the plug, the engine has failed the test.

Under no circumstances will a retest be permitted.

If the test fails and the above process has not been observed the test will be declared null and void and no further action will be taken.

**M5.5 BURETTE** to be a 25ml "B" grade minimum with 0.1ml maximum graduations as per ISO 385.

**M6 MEASURING ENGINE CUBIC CAPACITY:**

The formula to be used is:

Bore x Bore x Stroke x 0.7854 divided by 1000 = Cubic Centimeters of cylinder.

For engines/karts of multiple cylinders, repeat for each cylinder and add all results for Total Engine Capacity.

## M7 METHOD FOR MEASURING THE OPENING ANGLES OF ALL PORTS

In order to make the measurement more accurate, a 0.20mm thick and a 5mm wide wedge (according to CIK-FIA Technical Drawing #18 below) will be used to establish the start and finish of the measurement.

This wedge will be gripped at the chord axis at the highest point of each port, between the edge of the upper part of the piston ring or of the piston and its intersection with the edge of the inlet, exhaust or transfer port.

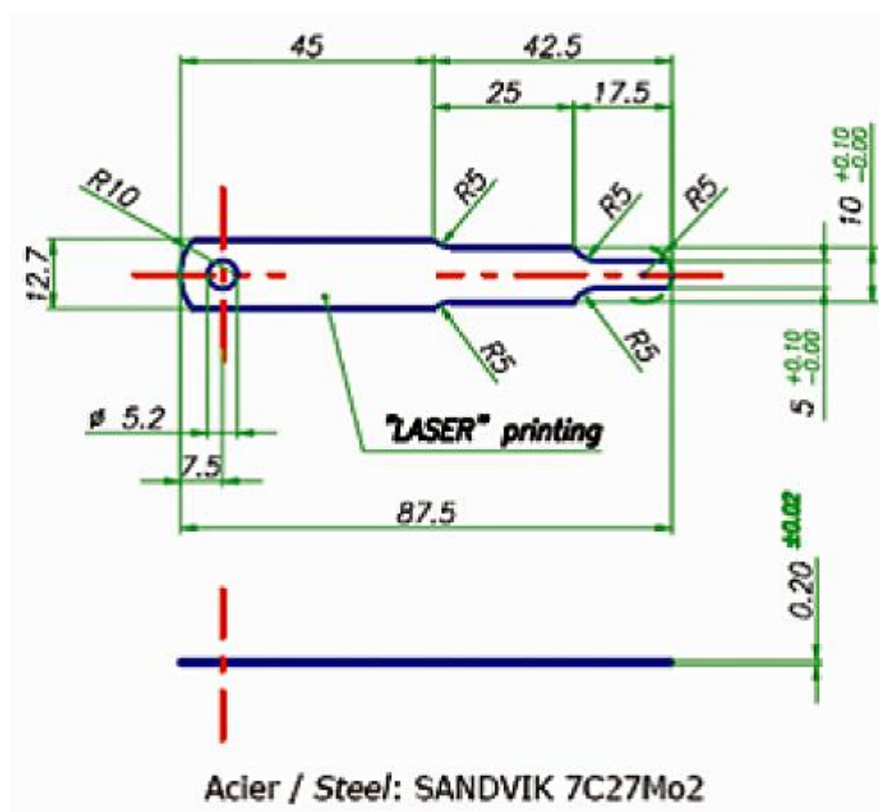
The position by which the gripping of the wedge will permit the measurement of the largest possible angle will be considered as the beginning and end of the measurement of the angle.

This wedge may be set in position through the inside of the cylinder or through the duct of the exhaust port to be checked. It will not be mandatory on any account for the wedge to be placed in a horizontal or vertical position.

The reading will be carried out using a digital display measuring device operated by a coder.

### NOTE: For Vortex Kiwi Mini Rok Only:

- Carefully remove the cylinder head.
- The competitor will then re-torque (16-18 Nm) the cylinder to the crankcase using the original nuts, steel washers and the specific spacers.
- Check all port opening angles, except the inlet port, from the inside of the cylinder only.
- With the inlet manifold fitted to the engine, check the inlet port opening angle from the outside of the cylinder only.



## M8 YAMAHA KT100S DISPLACEMENT:

The method of checking the maximum bore size of a Yamaha barrel will be to set a snap gauge at 53.03 mm using a micrometer (includes the tolerance 0.03 mm). Snap gauge to be applied to the barrel below the head gasket sealing face and above the exhaust port to check for maximum size. If the barrel is found to be oversize the head must be refitted and the bore size rechecked.

## **M9 TEST FOR MAGNETISM**

**M9.1** Tests for magnetism will be conducted using a Ferrite ring magnet according to CIK Regulation Appendix #8 and available from KartSport New Zealand.

**M9.2** The magnet as defined will have its mass subjected to gravity and must remain stuck in every respect to the surface of the item under test. Prior to the test being carried out the contact surfaces of the item under test shall have been cleared of any finishing treatment with an abrasive or similar device that will remove the finishing treatment to the satisfaction of the Technical Officer.

## **M10 VORTEX KIWI MINI ROK DISPLACEMENT**

The method of checking the maximum bore size of a Vortex Kiwi Mini Rok cylinder will be to set a snap gauge at 42.13mm using a micrometer (includes the tolerance 0.03mm). Snap gauge to be applied to the cylinder above the exhaust port to check for maximum size.

## **M11 VORTEX KIWI MINI ROK IGNITION TIMING**

- Remove spark plug. Insert dial gauge into spark plug thread and screw in tightly.
- Rotate engine past TDC and set gauge to read 0 at TDC. Slowly rotate engine until the dial gauge reads 3mm. Using a straight edge check that the timing marks line up correctly.



## **M12 SQUISH PROCEDURE**

(No tolerance allowed)

- The diameter of flux cored solder to be used on engines with a squish measurement of 1mm and over is 2.3mm +/- 0.1 mm.
- The diameter of flux cored solder to be used on engines with a squish measurement of under 1mm is 1.5 mm +/- 0.1 mm.

Insert the solder to the cylinder wall above the gudgeon pin and slowly rotate the piston over TDC. Cut off sample and repeat the procedure on the opposite side of the piston.

Use a digital Vernier and zero the reading on the KartSport New Zealand supplied pin gauge for the minimum squish of the engine being checked.

Measure and record both samples and divide the readings by 2. If the average reading is 0 or above, the minimum squish is legal.

This procedure will not be repeated.

**M13 Checking Minimum All Up Weight - MAW**

**M13.1** MAW is kart and driver in full racing gear after any race or time trial.

**M13.2** Drivers in weight controlled classes may be required to present karts for weighing at scrutineering.

**M13.3** Where the weight factor governs a class, no tolerance will be permitted. A competitor can expect to be weighed upon entering the Pit Shute during or following any time trial or race and must comply with the weight limit(s) specified. A competitor failing the first weigh in is permitted a maximum of two reweighs. Each reweigh must immediately follow the initial weigh in/reweigh respectively. The competitor and kart must remain at the scales during the reweigh process. Any competitor under the MAW after competition in any time trial or race will be excluded from that time trial/race. The weight of the competitor and/or kart will be determined by a Judge of Fact. Only the weighing procedure may be protested.

**M13.4** The scales of the day are to be taken as correct and no protest as to their accuracy will be entered into.

The scales of the day are the scales of the day.