

# NOISE TESTING METHOD PROPOSAL BUTTS QUARRY

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North East Derbyshire District Council

This document has used extracts from the [Auto Cycle Union Handbook 2021 – Technical and Safety Information](#), the 1994 Noise Council Code of Practice and an example from the [Snetterton race track Noise Information document](#).

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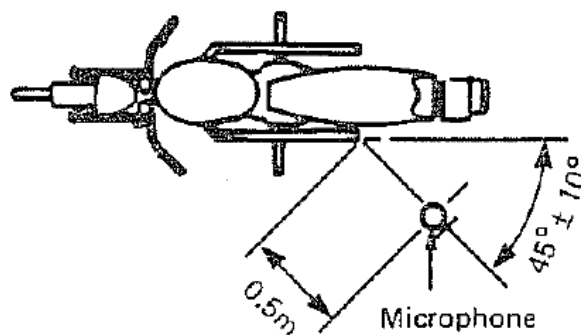
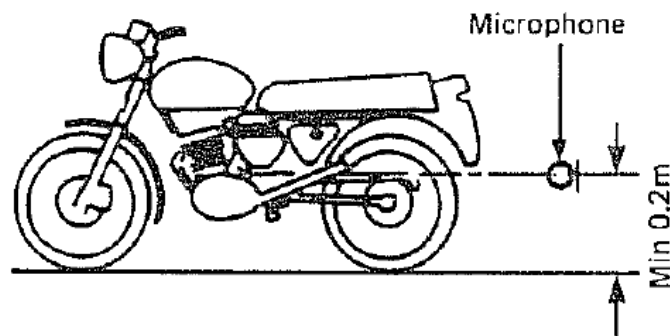
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## STATIC TEST METHOD

This is the currently required methodology to ensure compliance with the Abatement Notice. It uses the methodology common to the Noise Council Code of Practice and the ACU guide, along with the RMP figures for different engines.

### Method

- The sound level meter microphone to be placed 500mm from the exhaust pipe end, at an angle of 45 degrees measured from the exhaust centre line as near as possible to the height of the exhaust end, at least 20cm above the ground.
- During a sound level test, machines not equipped with a gear box neutral must be placed on a stand.
- The driver shall keep his engine running out of gear and shall increase the engine speed until it reaches the specified RPM. Measurements must be taken when the specified RPM level is reached. The RPM depends upon the mean piston speed corresponding to the stroke of the engine (see the stroke/RPM table).



### RPM Figures in Standard Situations

13metres/sec – TWO STROKES i.e. Road Racing where applicable.

11 metres/sec – FOUR STROKES i.e. Road Racing where applicable and ALL Trials and Enduro machines (two and four stroke).

<b>Stroke in mm</b>	<b>RPM at a mean piston speed of 13m/sec</b>	<b>RPM at a mean piston speed of 11m/sec</b>	<b>Stroke in mm</b>	<b>RPM at a mean piston speed of 13m/sec</b>	<b>RPM at a mean piston speed of 11m/sec</b>
30	13000	11000	66	5909	5000
31	12580	10645	67	5820	4925
32	12187	10313	68	5735	4853
33	11818	10000	69	5652	4783
34	11470	9706	70	5571	4714
35	11142	9429	71	5492	4648
36	10833	9167	72	5416	4583
37	10540	8919	73	5342	4521
38	10263	8684	74	5270	4459
39	10000	8462	75	5200	4400
40	9750	8250	76	5132	4342
41	9512	8049	77	5065	4286
42	9285	7857	78	5000	4231
43	9069	7674	79	4937	4177
44	8863	7500	80	4875	4125
45	8666	7333	81	4815	4074
46	8478	7174	82	4756	4024
47	8297	7021	83	4699	3976
48	8125	6875	84	4643	3929
49	7959	6735	85	4588	3882
50	7800	6600	86	4535	3837
51	7647	6471	87	4483	3793
52	7500	6346	88	4432	3750
53	7358	6226	89	4382	3708
54	7222	6111	90	4333	3667
55	7090	6000	91	4286	3626
56	6964	5893	92	4239	3587
57	6842	5789	93	4194	3548
58	6724	5690	94	4149	3510

Stroke in mm	RPM at a mean piston speed of 13m/sec	RPM at a mean piston speed of 11m/sec	Stroke in mm	RPM at a mean piston speed of 13m/sec	RPM at a mean piston speed of 11m/sec
59	6610	5593	95	4105	3474
60	6500	5500	96	4063	3438
61	6393	5410	97	4021	3402
62	6290	5323	98	3980	3367
63	6190	5238	99	3939	3333
64	6093	5156	100	3900	3300
65	6000	5077			

### Alternative Piston Speeds

- To calculate RPM for any other piston speed use the formula below

The RPM will be given by the relationship :-

$$n = 30,000 \times p/s$$

In which :

n = prescribed RPM of engine  
p = fixed mean piston speed in m/s  
s = stroke in mm.

## **POTENTIAL FOR SIMPLER ALTERNATIVE METHODS**

These are potentially simpler alternatives for noise testing. **They should not be used unless their equivalence to the standard ACU/Noise Council method has been verified.** This would be that a bike tested by the static noise test and complaint with the 96 decibel limit, also complies with the limit in the method below.

### **Simplified Static Noise Test**

This method is in use at the Snetterton race track for motorcycles, and is based on the cc, stroke and cylinder configuration of the motorcycle. The test is set up in the same way as the Static Noise Test earlier in this document

Noise Limit: 96 decibels

All static tests must be carried out at engine speeds (rpm) determined by cross-referencing the machine's engine type to the table below.

<b>4 Stroke</b>	<b>1 cylinder</b>	<b>2 cylinder</b>	<b>3 cylinder</b>	<b>4 cylinder</b>
250cc (4 stroke)	5500 rpm	8500 rpm		
400cc (4 stroke)	5000 rpm	6500 rpm	7000 rpm	8000 rpm
600cc (4 stroke)	5000 rpm	5500 rpm	6500 rpm	7000 rpm
750cc (4 stroke)	5000 rpm	5500 rpm	6500 rpm	7000 rpm
Over 750cc (4 stroke)	4500 rpm	5000 rpm	5000 rpm	5500 rpm
<b>2 Stroke</b>				
125cc (2 stroke)	7000 rpm			
250cc (2 stroke)		7000 rpm		
500cc (2 stroke)		5000 rpm	7000 rpm	7000 rpm

## 2 Metre Max Method

This alternative is the recognised method by the ACU for events.

As an alternative, and subject to testing for equivalence, the 2 Metre Max method provides a less complex testing method, requiring the Sound level metre to be further from the exhaust and the RPM to be held at a set figure based on the cc of the motorcycle.

Noise Limit: 112 decibels

- The sound levels will be measured with the sound meter/microphone fixed on a tripod, in the horizontal position, at the rear of the motorcycle.
- The sound meter will be positioned at a distance of 2 metres behind the motorcycle, with an angle of 45 degrees away from the centerline, on the exhaust side and at a height of 1.35m above the ground. The 2m distance is measured from the point where the centre of the rear tyre touches the ground. The throttle is opened to maximum for no more than 1 second or before the rev limiter is reached.
- It is preferred to make the tests on a soft ground, not reverberating, i.e grass or fine gravel.
- The test should only be carried out after engines have been “warmed up” to operating temperature. The ambient sound level must remain lower than 95–100 dBA.
- There is no tolerance for temperature.
- Whichever test method is in use temporary silencers, bypass pipes or the inclusion of temporary parts to achieve the silencing requirements are prohibited.