

# Results from ITAI - LTC Skid Test Day

Please address any comment to:

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*(car and car/trailer results)*

or

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*(motorcycle results)*

Saturday, 10<sup>th</sup> July 1999 At Leyland Technical Centre

Automotive Test and Development

## RESULTS

### DATA

#### Car

### DATA

#### Car

Ford Sierra 4 door standard saloon. Unladen weight 1230 kg

Laden weight 1460 kg

Difference in weight 230 kg

Trailer Unladen weight 368 kg

Tyres Goodyear 195/60R14 NCTII

Normal pressure. 26psi (1.8bar) front 26psi (1.8bar) rear

Fully laden or travel at

speed pressures. 29psi (2.0bar) front 36psi (2.5bar) rear

#### Trailer

A normally braked two wheel trailer with the brake connecting rod disconnected from the actuating assembly.

Trailer weight as tested 368 kg

### RESULTS

Low tyre pressure - unladen vehicle

Test	Vericom $\mu$	Chalk Gun Displacement	Speed (mph)	Chalk Gun $\mu$ value	Ave $\mu$ value
1A	0.69	23.50	42	0.765	
2A	0.72	20.15	37	0.692	0.722

3A	0.71	21.90	39	0.708	
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High tyre pressure – unladen vehicle

Test	Vericom $\mu$	Chalk Gun Displacement	Speed (mph)	Chalk Gun $\mu$ value	Ave $\mu$ value
4B	0.71	21.55	37	0.647	
5B	0.70	26.40	40	0.618	0.631
6B	0.68	24.70	39	0.627	

High tyre pressure – laden vehicle

Test	Vericom $\mu$	Chalk Gun Displacement	Speed (mph)	Chalk Gun $\mu$ value	Ave $\mu$ value	Comment
7C	0.68	26.00	39.00	0.596		No rear wheel lockup
8C	0.65	26.70	39.00	0.580		No rear wheel lockup
9C	Defective	27.10	40.00	0.602	0.591	Rear wheels locked up
10C	Defective	28.10	40.00	0.580		Delay in rear wheel lockup
11C	Defective	28.60	41.00	0.599		Partial rear wheel lockup

Unbraked trailer – high tyre pressure

Test	Vericom $\mu$	Chalk Gun Displacement	Speed (mph)	Chalk Gun $\mu$ value	Ave $\mu$ value	Comment
12D	Defective	34.20	40	0.477		The car and trailer
13D	Defective	34.60	41	0.495	0.476	jack-knifed towards the
14D	Defective	37.50	41	0.457		end of every test.

**DATA**

**Motorcycle**

The test motorcycle was an ex Police BMW K100 solo machine registered number J699 NCK. (registered June 1992 – 998cc). This machine was fitted with outriggers to protect the rider. The vehicle had been weighed previously with the rider on board with the following results: -

Front weight (level) - 160 kg.

Rear weight (level) - 216 kg.

Total weight (level) - 376 kg.

Rear weight (raised) - 225 kg.

Wheelbase - 1.53 m.

Rolling radius - 0.30 m.

Height raised - 0.22 m.

Calculated HcG - 0.55 m.

### **Tyres**

Front - Michelin Macadam 100/90 18 32 psi

Rear - Metzeler ME55A Metronic 130/90 17 36 psi

The machine was fitted with a conventional hydraulic non ABS (Anti-lock Braking System) operating disc brakes fitted to both wheels. Brakes were not interlinked in any way.

### **Tests**

Seventeen tests were carried out as follows

M/C Test No.	Speed (mph)	Chalk Distance (m.)	Deceleration rate (g)	Comment
Remit	To stop as quickly as possible without locking the wheels			
1.	39	22.5	0.688	Slight rear wheel lock
2.	44	25.1	0.786	Slight lock front/rear wheel – instability to front wheel
3.	39	21.5	0.720	Slight rear wheel lock
4.	46	27.3	0.789	Slight rear wheel lock – front wheel lock immediately before coming to rest.
Remit	To stop using locked front wheel – no rear braking			
5.	31	21.5	0.455	Judder from front wheel then sliding on outrigger
6.	29	-		Ditto
7.	31	-		As above – rotation of machine on outrigger. Rear wheel stopped rotating.
Remit	To stop using both front braking and rear wheel locked			

8.	37	22.9	0.609	
9.	36	25.9	0.506	
10.	42	28.4	0.633	
Remit	To stop using locked rear wheel only – no front braking			
11.	45	61.1	0.338	
12.	45	67.7	0.305	
13.	49	68.5	0.357	
14.	65	106.4	0.404	No rear wheel lock
15.	61	106.8	0.355	
Remit	Cadence braking to front wheel – rear wheel locked			
16.	45	30.5	0.676	8 full applications of front brake.
17.	49	34.1	0.717	ditto

## VIDEO

### **Please note.**

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To obtain a copy of the video and annotated results sheet please contact Guy DAY at the address at the top of the page. The video shows all of the tests in the above order and was filmed using DVD but will be supplied in normal format 25 frames per second VHS format. Costs:

Video alone £27.50.(U.K.) £34.00 (OVERSEAS)

Annotated results £20.00 (UK) £24.00 (OVERSEAS)

Video and annotated results £35.00 (UK) £39.00 (OVERSEAS)

Cheques are payable to the Institute of Traffic Accident Investigators in sterling cheques/money orders please.

### **ACKNOWLEDGEMENTS**

The weights in the car were 25 litre water containers that were placed in the boot, back and front passenger seat loaned by James Law (Chemicals) Ltd, Rochdale.

Weighing was done on the test day by using Novatech portable load cell equipment loaned by Lunar Caravan Manufacturers, Leyland.

Speed assessment was done using a Gatso mini radar loaned by Lancashire Constabulary.

The motorcycle was provided by the Lancashire Constabulary Accident Investigation Unit.

The motor car was a standard Ford Sierra 4 door saloon loaned by AAA Recovery to the Lancashire Constabulary Accident Investigation Unit for test purposes.

Brian Henderson of Lancashire Investigation Services provided the Vericom 2000.

Other equipment (trailer, compressor etc), was supplied by Guy Day of TAIRS.

Video production was done by Venture Video.