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features related to
windscreen swept area.
(Supplementary report to
Quality and field of vision -
a review of the needs of
drivers and riders)*

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PPAD 9/33/39

Survey of dimensional features
related to windscreen swept area

Supplementary report to
Quality and field of vision - A review
of the needs of drivers and riders

Undertaken on behalf of:

The Department of the Environment,
Transport and the Regions

Prepared by

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1. Introduction

The project entitled 'Quality and field of vision' (PPAD 9/33/39) undertaken for DETR required that the effect of A-pillar thickness on driver vision be investigated. In order that a range of vehicles representing the different levels of A-pillar thickness could be used in the experimental work, a survey of vehicles was first undertaken.

Whilst the focus of the survey was to measure A-pillar thickness and the driver's seated position in order to calculate the visual angle obscured, a request was made by the client for further information to be collected at the same time. The additional information collected related to the area of the windscreen swept by the window wipers. This report details the information obtained from this aspect of the survey.

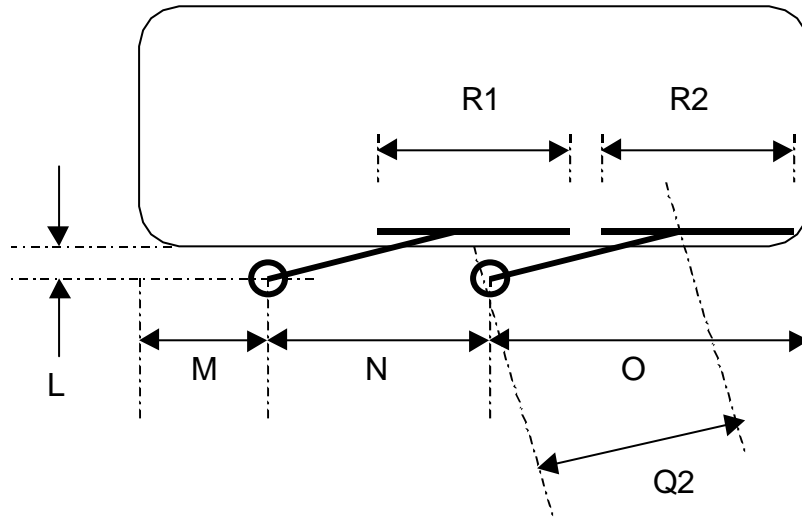
2. Survey details

2.1 Vehicles surveyed

A total of twenty seven vehicles were surveyed and these are detailed in table 1. The cars were selected for inclusion in the survey according to their popularity on the road. This was estimated from sources such as the NCAP testing programme and surveys undertaken by What Car?

2.2 Measurements taken

In addition to the features shown in figure 1 below, values for the windscreen inclination from vertical and the height of the upper and lower edges of the windscreen above the ground, were also collected. These are all given in table 1.

Figure 1: Features surveyed to calculate swept area of windscreen

3. Survey results

The raw data from the survey is given in table 1 overleaf. A statistical summary for each feature measured, in terms of minimum, mean and maximum values, is given in table 2.

Feature	Minimum	Mean	Maximum
Depth below windscreen lower edge of wiper drive shaft L	50	83	165
Distance from windscreen's off side edge to first wiper drive shaft M	22	173	845
Distance between wiper drive shafts N	400	558	1250
Distance of second wiper drive shaft from windscreen's near side O	130	746	1030
Length of off side wiper arm Q1	425	544	840
Length of near side wiper arm Q2	455	598	895
Length of off side wiper blade R1	460	549	705
Length of near side wiper blade R2	355	511	705
Windscreen inclination from vertical	27	31	49
Height of windscreen top edge (centre) above ground	1214	1375	1652
Height of windscreen bottom edge (centre) above ground	615	955	1210

Table 2: Minimum, mean and maximum values for each feature.

Car Number	1	2	3	4	5	6	7	8	9	10
Make	Audi	Alpha Romeo	Audi	Jeep	Honda	Land Rover	Jaguar	BMW	Fiat	Peugeot
Model	A4	156	A6	rand Cherokee	Accord	Discovery	XK8	728i	Seicento SX	406
Year/ Registration	T	T	T	T	V	S	T	T	T	T
Depth below windscreen lower edge of wiper drive shaft L	55	60	75	120	65	105	126	165	50	50
Distance from windscreen's off side edge to first wiper drive shaft M	113	135	90	140	85	240	60	845	115	125
Distance between wiper drive shafts N	555	510	560	670	496	655	660	570	500	545
Distance of second wiper drive shaft from windscreen's near side O	820	860	855	820	880	680	830	220	890	890
Length of off side wiper arm Q1	518	500	560	490	548	460	485	600	425	510
Length of near side wiper arm Q2	558	560	580	510	623	465	530	580	455	600
Length of off side wiper blade R1	550	530	570	525	560	520	530	635	480	610
Length of near side wiper blade R2	528	535	540	525	481	520	530	560	482	551
Windscreen inclination from vertical	27	28	29	33	29	49	27	31	34	29
Height of windscreen top edge (centre) above ground	1324	1335	1331	1602	1320	1652	1214	1347	1328	1344
Height of windscreen bottom edge (centre) above ground	615	930	935	1200	910	1210	900	890	948	968

Car Number	11	12	13	14	15	16	17	18	19	20
Make	Renault	Nissan	Renault	Toyota	Ford	Skoda	Peugeot	Vauxhall	Seat	Daewoo
Model	Laguna	Primera	Espace	Yaris	Ka	Octavia	206	Astra	Alhambra	Matiz
Year/ Registration	V	T	T	T	V	V	V	S	V	V
Depth below windscreen lower edge of wiper drive shaft L	75	100	75	70	75	75	65	82	115	75
Distance from windscreen's off side edge to first wiper drive shaft M	22	70	110	100	90	80	685	100	108	100
Distance between wiper drive shafts N	520	600	440	400	470	500	435	502	1250	402
Distance of second wiper drive shaft from windscreen's near side O	890	762	1030	890	750	905	180	808	222	810
Length of off side wiper arm Q1	610	521	605	560	470	498	650	560	840	485
Length of near side wiper arm Q2	855	510	820	652	510	682	590	586	565	600
Length of off side wiper blade R1	610	530	652	530	480	530	480	506	705	525
Length of near side wiper blade R2	455	503	450	355	425	481	660	478	705	400
Windscreen inclination from vertical	28	30	30	31	31	31	28	28	30	31
Height of windscreen top edge (centre) above ground	1340	1308	1560	1412	1323	1363	1331	1325	1592	1405
Height of windscreen bottom edge (centre) above ground	935	930	1090	985	964	945	925	945	1088	968

Car Number	21	22	23	24	25	26	27
Make	Citroen	VW	BMW	Rover	Volvo	Ford	Ford
Model	Xsara	Passat	523i	200	V40	Mondeo	Focus
Year/ Registration	T	T	T	S	S	P	T
Depth below windscreen lower edge of wiper drive shaft L	50	70	80	95	85	75	110
Distance from windscreen's off side edge to first wiper drive shaft M	110	65	610	125	100	130	130
Distance between wiper drive shafts N	510	560	650	600	540	480	475
Distance of second wiper drive shaft from windscreen's near side O	800	810	130	804	810	905	890
Length of off side wiper arm Q1	480	510	580	550	540	560	570
Length of near side wiper arm Q2	550	500	620	530	560	670	895
Length of off side wiper blade R1	555	530	570	460	550	540	550
Length of near side wiper blade R2	502	530	660	460	500	500	475
Windscreen inclination from vertical	31	30	31	32	29	30	30
Height of windscreen top edge (centre) above ground	1328	1350	1372	1330	1295	1320	1385
Height of windscreen bottom edge (centre) above ground	939	970	945	915	953	816	965

Table 1: Windscreen swept area – raw data from survey